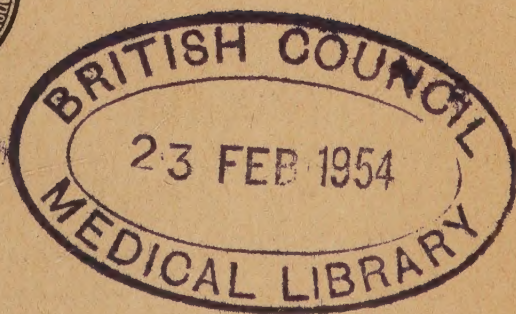


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COAL MINES ACT, 1911

Regulations and Orders relating to Safety and Health

1953 EDITION



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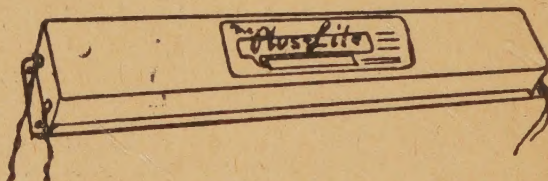
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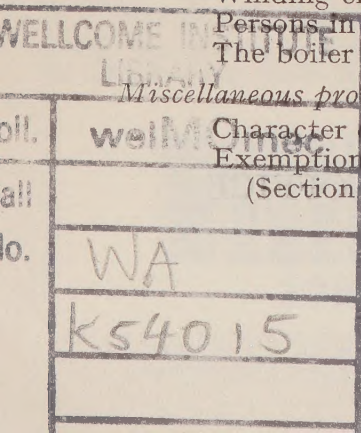
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INTRODUCTION

This volume contains, with the few exceptions indicated on page 1, all the regulations and orders dealing with safety and health in force on 31 December, 1952, which apply generally to mines under the Coal Mines Act, 1911.

The volume follows the pattern of the previous edition (1951) and is divided into four parts. Part One contains all the amendments which have been made to the 1911 Act ; Part Two contains the general codes of regulations made in 1913 and 1920, followed by all other regulations and orders (except those relating to matters within the province of the Mining Qualifications Board) arranged in alphabetical sequence according to subject matter ; Part Three contains the Rules of the Mining Qualifications Board and other information relating to statutory certificates of qualifications ; and Part Four contains lists of approved apparatus, etc., arranged alphabetically and corrected to 31 December, 1952. The memorandum on the storage of explosives which is included as an appendix has been revised as a consequence of recent changes in the law on this subject.

The object of Part One is to enable readers to embody all the amendments in their copies of the 1911 Act. This Part has been printed on one side of the paper only so that the pages may be detached and pasted into a copy of the Act at the appropriate places. Amendments included in earlier editions have been repeated here, but new material can be identified by reference to the contents page, where the headings of sections incorporating amendments which have not appeared in earlier editions are printed in italics.

The regulations and orders in Part Two have had all subsequent amendments incorporated into them so that they read continuously in the form in which they now have effect. The amending regulations which are incorporated are named in a note in italics printed immediately after the title of each of the principal regulations or orders which have been so amended.

Part Three is designed mainly for mining students.

Although the approvals contained in Part Four are in general those of the individual makes or brands of apparatus, a number of approvals which cover any apparatus which conforms to certain prescribed specifications have been included at the end of that Part. In previous editions such general approvals were included as footnotes to the regulations for the purposes of which they were made. The list of types of electrical apparatus which have been certified as flameproof

is too long to be included in Part Four ; the names of types certified each year were published as appendices to the Annual Reports of H.M. Electrical Inspector of Mines from 1931 to 1936, and since that date quarterly lists have been issued.

A chronological list of regulations and orders in force, including a few which it is not considered necessary to print in this volume will be found on page 1, and there is a list of M. & Q. Forms in current use on page 254.

Ministry of Fuel and Power,
Thames House South,
Millbank,
London, S.W.1.
December, 1952.

GENERAL REGULATIONS AND ORDERS IN FORCE ON 31 DECEMBER, 1952.

Complete list of Regulations and Orders relating to Safety and Health in Mines under the Coal Mines Act, 1911, arranged in order of date.

(Note.—Subject headings are given on the contents pages. The object here is to give a complete list of the official titles and statutory reference numbers of orders (including General Regulations) within the scope of the volume which were in force on 31 December, 1952, and to enable any order to be found if its title, date or reference number is known.

All orders in force are included in date order, whether they have been substantially amended by subsequent orders or merely make minor amendments to earlier ones: in either event only the consolidated order as it now reads appears in the text. Orders which are not given in the text (because of their limited application) are marked with an asterisk and a brief note of the subject dealt with is given after their title. Orders which do no more than revoke earlier ones are not included.

For the sake of completeness, a few relevant orders have been included which were made under authorities other than the Coal Mines Act, 1911. The authority under which an order was made is indicated in square brackets after its title).

| S.R. & O. OR S.I. NUMBER. | TITLE. | PAGE. |
|------------------------------|--|-------|
| 1906/934 | Order of 22 December, 1906 [<i>Notice of Accidents Act</i> , 1906, S. 5] | 74 |
| 1906/516 | Regulations of 15 May, 1909 (Procedure and Costs of Reference made under S. 1(5)) [<i>Coal Mines Regulation Act</i> , 1908] | * |
| 1912/510 | Order of 21 May, 1912 | 153 |
| 1912/634 | Order of 22 June, 1912 (Procedure for ascertaining views of workmen) | * |
| 1912/1539 | Order of 17 October, 1912 (Manner of settling disputes—serving notices) | * |
| 1913/10 | Coal Mines (Reference) Rules of 8 January, 1913 (Procedure and Costs of Reference) | * |
| 1913/341 | General Regulations of 1 April, 1913 (Hours of employment of Winding Enginemen) | * |
| 1913/748 | General Regulations of 10 July, 1913 | 36 |
| 1913/950 | General Regulations of 29 August, 1913 (Washing and drying accommodation) | * |
| 1913/955 | Regulations of 4 September, 1913 (Procedure and Costs of Reference: Washing and drying accommodation) | * |

| S.R. & O. OR S.I. NUMBER. | TITLE. | PAGE. |
|------------------------------|---|-----------|
| 1920/873 | General Regulations of 3 June, 1920 (Ganister workings) | 111 |
| 1920/1423 | General Regulations of 30 July, 1920 | 66 |
| 1922/113 | Coal Mines General Regulations of 10 February, 1922 | 113 |
| 1923/313 | Horses in Coal Mines (Glanders) Order of 12 March, 1923 | 113 |
| 1927/1155 | Coal Mines General Regulations (Safety Lamps) of 9 December, 1927 | 120 |
| 1928/971 | Coal Mines General Regulations (Rescue) of 10 December, 1928 | 140 |
| 1929/1182 | Safety Lamps (Relighting) Order of 20 December, 1929 | 120 |
| 1930/91 | Coal Mines General Regulations (First Aid) of 11 February, 1930 | 106 |
| 1931/521 | Explosives in Coal Mines (Horse Killers) Order of 22 June, 1931† | * |
| 1934/6 | Explosives in Coal Mines Order of 1 January, 1934† | * |
| 1935/652 | Coal Mines (Rescue) Amending Regulations of 8 July, 1935 | 140 |
| 1937/143 | Coal Mines General Regulations (Winding and Haulage) of 2 March, 1937 | 182 |
| 1937/548 | Coal Mines (First Aid) Amending Regulations of 14 June, 1937 | 106 |
| 1937/1049 | Explosives in Coal Mines Order of 18 November, 1937† | * |
| 1938/797 | Coal Mines General Regulations of 8 August, 1938 | 105 & 163 |
| 1938/1407 | Telephone and Signalling Apparatus Order of 23 November, 1938 | 164 |
| 1938/1408 | Safety Lamps (Relighting) Order of 23 November, 1938 | 120 |
| 1938/1409 | Explosives in Coal Mines Order of 23 November, 1938† | * |
| 1939/322 | Coal Mines General Regulations (Firedamp Detectors) of 6 March, 1939 | 102 |
| 1939/342 | Firedamp Detectors (No. 1) Order of 23 March, 1939 (Approved types of detectors) | * |
| 1939/344 | Firedamp Detectors (No. 3) Order of 23 March, 1939 (Approved types of detectors) | * |
| 1939/1803 | Coal Mines General Regulations (Precautions against Coal Dust) of 8 December, 1939 | 69 |
| 1939/1805 | Mine Dust Analysis Order of 8 December, 1939 ... | 73 |
| 1940/293 | Coal Mines General Regulations (Installation and use of Electricity) Modification Order of 28 February, 1940 (Flexible cables) | * |
| 1941/513 | Coal Mines (Cardox and Hydrox) Order of 9 April, 1941 | 99 |
| 1942/1507 | Coal Mines (Mining Examinations and Certificates of Competency) Order of 16 July, 1942 | 7 |
| 1943/1360 | Explosives in Coal Mines Order of 17 September, 1943† | * |
| 1943/1696 | Coal Mines (South Wales) (Pneumoconiosis) Order of 8 December, 1943 [<i>Defence Regulations 60A</i>] ... | 139 |
| 1945/1217 | Coal Mines (Training) General Regulations of 28 September, 1945 | 165 |
| 1945/1468 | Coal Mines (Cardox and Hydrox) Order of 13 November, 1945 | 99 |
| 1946/2060 | Explosives in Coal Mines Order of 29 November, 1946† | * |

† As from 1 February, 1952, these orders only apply to mines in which coal is neither worked nor intended to be worked.

| S.R. & O. OR S.I. NUMBER. | TITLE. | PAGE. |
|------------------------------|--|-------|
| 1947/972 | Coal Mines (Lighting) General Regulations of 17 May, 1947 | 113 |
| 1947/973 | Coal Mines (Support of Roof and Sides) General Regulations of 17 May, 1947 | 155 |
| 1947/974 | Coal Mines (Ventilation) General Regulations of 17 May, 1947 | 176 |
| 1948/181 | Explosives in Coal Mines Order of 4 February, 1948† | * |
| 1948/302 | Coal Mines (Winding and Haulage) General Regulations of 18 February, 1948 | 184 |
| 1948/903 | Firedamp Detectors (No. 5) Order of 28 April, 1948 (Approved types of detectors) | * |
| 1948/1918 | Coal Mines (Pneumatic Lighting Unit) Order of 17 August, 1948 | 119 |
| 1949/530 | Coal Mines (Locomotives) General Regulations of 24 March, 1949 | 121 |
| 1949/924 | Coal Mines (Lighting and Contraband) General Regulations of 16 May, 1949 | 121 |
| 1949/2330 | Coal Mines (Horses) General Regulations of 14 December, 1949 | 113 |
| 1950/77 | Coal Mines (Mining Qualifications Board) General Regulations of 16 January, 1950 | 185 |
| 1950/368 | Coal Mines (Certificates of Competency) (Copies) Order of 15 March, 1950 (Fees for copies of Certificates) ... | * |
| 1950/369 | Coal Mines (Certificates of Competency) (Fees) Order of 15 March, 1950 (Fees for Certificates) ... | * |
| 1950/743 | Coal Mines (Certificates of Competency) General Regulations of 9 May, 1950 | 185 |
| 1950/923 | Ironstone and Shale Mines (Locomotives) General Regulations of 6 June, 1950 | 121 |
| 1951/848 | Coal Mines (Officials and Inspections) General Regulations of 11 May, 1951 | 134 |
| 1951/1675 | Coal Mines (Explosives) Order of 17 September, 1951 | 75 |
| 1952/845 | Coal Mines (Officials and Inspections) General Regulations of 26 April, 1952 | 134 |
| 1952/1224 | Coal Mines (Deputies' Certificates) (Fees) Order of 24 June, 1952 | * |
| 1952/1846 | Coal Mines (Surveyors and Plans) General Regulations of 20 October, 1952 | 158 |
| 1952/1847 | Coal Mines (Shallow Workings and Dangerous Deposits) General Regulations of 20 October, 1952 | 153 |
| 1952/2070 | Coal Mines (Medical Examinations) General Regulations of 29 November, 1952 | 132 |
| 1952/2127 | Coal Mines (Plans) Rules of 9 December, 1952 ... | 161 |

† As from 1 February, 1952, these orders only apply to mines in which coal is neither worked nor intended to be worked.

PART ONE

AMENDMENTS OF THE COAL MINES ACT, 1911

Since the Coal Mines Act, 1911, was passed, many of its provisions have been varied or amended. To facilitate reference to current requirements, all the sections of the Act which have been amended are reprinted below with the amendments incorporated in place of the original text so as to read continuously in the form in which they now have effect. The revised sections are printed on one side of the paper only so that they can be cut out and pasted in a copy of the Act in its original form. Those readers who possess a copy of the Act which incorporates the amendments printed in Part One of the 1951 edition of this volume need only substitute the sections which have their titles printed in italics in the contents page, in order to bring their copy of the Act up to date.

Most of the amendments have been made under the powers conferred on the Minister by Section 86 (1) of the Act. Other statutes amending the Act and the sections affected are as follows—

Coal Mines Act, 1914—extends Section 11 and makes minor verbal amendments to Sections 42(2), 70 and 114.

Workmen's Compensation Act, 1923—amends Section 18.

Workmen's Compensation Act, 1925—repeals Section 110. This Act contains a provision on similar lines which was in turn replaced by a corresponding provision in the National Insurance (Industrial Injuries) Act, 1946.

Statute Law Revision Act, 1927—deletes the redundant words listed on page 35 at the end of this Part.

Public Health Act, 1936—the reference to the Public Health Act of 1875 in Section 26 should be read as a reference to the Act of 1936.

Ministry of Fuel and Power Act, 1945—Minister of Fuel and Power should be read throughout wherever “Secretary of State” appears.

Criminal Justice Act, 1948—abolishes the sentence of hard labour and accordingly the references in Sections 28 and 101 to hard labour should be deleted.

Coal Industry Act, 1949—extends the application of Section 86(1).

Statute Law Revision Act, 1950—amends Section 62.

A number of verbal amendments relating to the title of “deputy” were made by the Coal Mines (Officials and Inspections) General Regulations, 1951. These are listed at the end of this Part and those which are not incorporated in the following revised sections are indicated.

SECTION 2.

APPOINTMENT OF MANAGER.

[*Verbal amendment of 2(2) by the Coal Mines (Certificates of Competency) General Regulations, 1950, No. 743.*]

2.—(2) If any mine is worked without there being such a manager for the mine as is required by this section, the owner and agent shall each be guilty of an offence against this Act :

Provided that, if the person appointed to be manager of a mine, by reason of death, resignation, or otherwise ceases to be manager, nothing in this section shall prevent the mine being worked (for a period not exceeding four months) until a new manager is appointed, if in the meantime a competent person holding a first-class or second-class certificate of competency under this Act valid with respect to that mine is temporarily appointed to perform the duties and exercise the powers of manager.

SECTION 3.

DAILY SUPERVISION OF MINE BY MANAGER OR UNDER-MANAGER.

[*Verbal amendments to 3(2) by the Coal Mines (Certificates of Competency) General Regulations, 1950, No. 743.*]

3.—(2) In cases where, on account of the absence of the manager or under-manager on leave or from sickness or any other temporary cause, such daily personal supervision as is required by this section cannot be exercised, arrangements shall be made for the duties of the manager or under-manager, as the case may be, in respect of daily personal supervision being performed—

(a) in the absence of the manager, by the under-manager, if any, or by a person not under the age of twenty-five years and holding a first or second-class certificate of competency under this Act valid with respect to that mine, appointed in writing by the owner or agent ;

(b) in the absence of the under-manager, in the case of a mine for which a separate under-manager is required by this Act to be appointed by a person not under the age of twenty-five years and holding a first or second-class certificate of competency under this Act valid with respect to that mine appointed as aforesaid :

And any person performing the duties of a manager or under-manager, whether under this or under the last preceding section, shall have the same responsibility, and shall be subject to the same liability, as the person whose duties he is performing.

SECTION 5.

QUALIFICATIONS OF MANAGERS AND UNDER-MANAGERS.

[*Verbal amendments to 5 by the Coal Mines (Certificates of Competency) General Regulations, 1950, No. 743.*]

5.—(1) A person shall not be qualified to be appointed or to be manager of a mine required to be under the control of a manager, unless he is at least twenty-five years of age and is for the time being registered as the holder of a first-class certificate of competency under this Act valid with respect to that mine.

(2) A person shall not be qualified to be appointed or to be an under-manager of a mine, or manager of a mine which is not required to be under the control of a manager, unless he is for the time being registered as the holder of a first-class or a second-class certificate of competency under this Act valid with respect to that mine.

SECTION 7.

DESCRIPTION OF CERTIFICATES OF COMPETENCY.

[*Proviso added by the Coal Mines (Certificates of Competency) General Regulations, 1950, No. 743.*]

7.—There shall be two descriptions of certificates of competency under this Act (that is to say)—

- (1) first-class certificates ;
- (2) second-class certificates.

Provided that there may be certificates of either class expressed to be valid only with respect to mines of a specified class or description. Any certificate of which the validity is not so limited shall be valid for all mines.

SECTION 8.

CONSTITUTION OF MINING QUALIFICATIONS BOARD.

[*New provisions substituted for 8(1) by the Coal Mines (Mining Qualifications Board) General Regulations, 1950, No. 77.*]

8.—(1) For the purpose of ascertaining the fitness of applicants for certificates of competency under this Act, and of exercising and performing any other powers and duties conferred upon them by this Act or by regulations made hereunder, there shall be a Mining Qualifications Board consisting of a chairman and seven other members appointed by the Minister of Fuel and Power.

The members of the Board shall include persons appearing to the Minister to have experience respectively of mining, of education and of administration, but the Board shall have the power to act notwithstanding a vacancy among the members thereof.

The members of the Board shall be appointed on such conditions and for such term, not exceeding five years, as may be determined by the Minister, but any appointment may be terminated by the Minister at any time. A retiring member shall be eligible for reappointment.

SECTION 9.

CERTIFICATES OF COMPETENCY AND OTHER QUALIFICATIONS.

[New provisions substituted for 9(1) and (2) by the Coal Mines (Mining Qualifications Board) General Regulations, 1950, No. 77. New provisions substituted for 9(6) and additional subsection 9(7) inserted by the Coal Mines (Mining Examinations and Certificates of Competency) Order, 1942, No. 1507. Amendments to 9(1) made by the Coal Mines (Officials and Inspections) General Regulations, 1951, No. 848, and the Coal Mines (Surveyors and Plans) General Regulations, 1952, No. 1846.]

9.—(1) Rules made by the Mining Qualifications Board with the approval of the Minister of Fuel and Power shall prescribe the qualifications to be possessed by applicants for certificates of competency under this Act and for any other certificates of qualifications required by this Act or by regulations made under this Act to be held by persons concerned with the management of mines or otherwise acting in or in connection with the carrying on of mining operations.

Such rules shall require an applicant for a certificate of competency—

(a) to have had such practical experience in mining (either wholly in the United Kingdom or partly in the United Kingdom and partly elsewhere) as may be specified in the rules, which experience shall be for a period of not less than five years, subject to such reduction in respect of any qualification or experience (including performance of national service) acquired by the applicant as the Board may determine having regard to any directions given to them by the Minister,

(b) to have attained such standard of general education as is specified in the rules, and to be of good character.

Such rules shall with respect to applicants for a deputy's certificate comply with the provisions of subsection (4) of section fifteen of this Act.

Such rules with respect to applicants for a surveyor's certificate shall require any such applicant to have had such experience in surveying mines (whether in the United Kingdom or elsewhere) as may be specified in the rules, which experience shall be for a period of not less than four years subject to such reduction in respect of any qualification or experience (including performance of national service) acquired by the applicant as the Board may determine having regard to any directions given to them by the Minister.

(2) Rules made by the Board with the approval of the Minister shall specify the methods by which applicants for certificates may satisfy the Board that they possess the qualifications required, which methods may include the possession of degrees or diplomas or other qualifications specified in the rules, attendance at courses of instruction so specified and the passing of examinations held by the Board. In

relation to examinations held by the Board the rules shall provide for the nature of the examinations and the publication of the times and places at which they are held, and may provide for other matters relating thereto, including the ages at which applicants may take them.

(6) For the purposes of this section, unless the context otherwise requires, the following expressions have the meanings hereby respectively assigned to them, that is to say—

“Approved diploma” means a diploma (approved by the Minister) involving scientific and mining training awarded by a University or by an Institution.

“Approved degree” means a degree (approved by the Minister) involving scientific and mining training awarded by a University.

“National Service” means whole-time service performed in any one or more of the following cases, that is to say—

(1) as a militiaman in pursuance of the provisions of the Military Training Act, 1939 (2 & 3 Geo. 6. c. 25);

(2) as a member of His Majesty's regular forces or of His Majesty's reserve and auxiliary forces during the period of six months immediately prior to the 3rd day of September, 1939;

(3) either wholly during or partly during and partly after the conclusion of any war in which His Majesty has been, is or may be engaged after the 2nd day of September, 1939—

(a) in any of the armed forces of the Crown; or

(b) in civil defence duties; or

(c) in any duties which in the opinion of the Board for Mining Examinations were essential duties and which in their opinion it was expedient in the national interests for the applicant to perform;

whether wholly performed in any one of such forces or duties or partly in one and partly in another; and

“His Majesty's regular forces” and “His Majesty's reserve and auxiliary forces” have the meanings respectively assigned to them by the Military Training Act, 1939; and

“Civil Defence duties” means duties the performance of which a local authority is or was required or authorised to organise in the discharge of functions conferred or imposed on it by the Air-Raid Precautions Act, 1937 (1 & 2 Geo. 6. c. 6), or the Civil Defence Act, 1939 (2 & 3 Geo. 6. c. 31), or Part II of the Defence (General) Regulations, 1939, or any functions relating to the extinction of fires whether exercisable under those Acts or that part of those Regulations or otherwise; and “essential duties” means duties essential for the defence of the realm or the prosecution of the war or essential to the life of the community.

(7) Any approval for the purposes of this section by the Minister may be subject to such conditions as he thinks fit and he may revoke or vary any approval.

SECTION 10.

GRANT OF CERTIFICATES OF COMPETENCY.

[New provisions substituted for 10(1) by the Coal Mines (Mining Qualifications Board) General Regulations, 1950, No. 77. Additional subsection 10(4) inserted by the Coal Mines (Mining Examinations and Certificates of Competency) Order, 1942, No. 1507, and amended verbally by the 1950 Regulations.]

10.—(1) The Minister of Fuel and Power shall deliver to every applicant who is reported by the Mining Qualifications Board to have passed the examination satisfactorily or to possess degrees or diplomas or other qualifications exempting him therefrom such a certificate of competency as the case requires ; so, however, that in the case of any such applicant—

(a) who shall not have attained the age of twenty-three years at the date when he is so reported ; or

(b) who has not had such practical experience as is required by virtue of paragraph (a) of subsection (1) of section nine of this Act ;

such delivery shall be postponed, and the applicant shall neither be qualified to hold nor be registered as the holder of such a certificate until he shall have attained that age and shall have had such experience.

(4) The Minister may, if he thinks fit, vary in any certificate of competency the name of the holder on proof to the satisfaction of the Minister that the name is incorrectly stated therein or that such person has changed his name or is known by a name different from that mentioned in the certificate.

SECTION 14.

APPOINTMENT AND DUTIES OF DEPUTIES.

[New subsections (1), (2), (2A), (2B), (3) and (3A) substituted for subsections (1), (2) and (3) by the Coal Mines (Officials and Inspections) General Regulations, 1951, No. 848.]

14.—(1) For every mine there shall be appointed by the manager in writing one or more competent persons (in this Act referred to as “deputies”), each of whom shall, in the district assigned to him, during his shift—

(a) be in charge of all workmen for the time being in the district, and of all operations in progress therein ; and

(b) make such inspections and carry out such other duties, with regard to the presence of gas, ventilation, support of roofs and sides and general safety (including the health of persons working in the district), as are required by this Act and the regulations of the mine.

(2) A deputy shall be required to devote his whole time to the duties specified in the foregoing subsection :

Provided that, subject to the provisions of the next following subsection, the said requirement shall not—

(a) apply in relation to any district—

- (i) in any mine of stratified ironstone ;
- (ii) in any mine exempted therefrom by the inspector of the division on the ground of the special circumstances of that mine ;
- (iii) in a small mine, if the number of persons at work in that district during the shift concerned does not exceed ten ; or
- (iv) in a mine to which none of the foregoing sub-paragraphs of this proviso apply, if the number of persons at work in that district during the shift concerned does not exceed five ; or

(b) prevent any deputy in any mine being employed in firing shots.

(2A) No duty shall be assigned to any deputy by virtue of the proviso to the last foregoing subsection, if performance of the duty in question would prevent that deputy carrying out his duties relating to safety in a thorough manner, or if the inspector of the division has required that he shall not perform it on the ground that it is likely to prevent him so carrying out the said duties.

(2B) No deputy shall at any time perform any duty himself, or knowingly permit any work by any workman under his charge, if the same would prevent or delay the due performance of any duty or work necessary for safety.

(3) The manager shall define the limits of each district in a mine to be in the charge of a deputy (in this Act referred to as a “deputy’s district”), so that—

(a) every place in the mine in which mineral or stone is being worked is included within the limits of some such district ; and

(b) no such district is of such a size as may prevent the deputy concerned from carrying out all his duties in a thorough manner, or from making the inspection required by section sixty-four of this Act (if not interrupted) within a period of one and a half hours :

Provided that nothing in paragraph (a) shall require any place to be included in any district by reason only that mineral or stone is being worked for the purpose of repairing, restoring or enlarging roads, or of preparing accommodation required for the working of the mine.

(3A) The inspector of the division may object to the limits of any deputy’s district as defined by the manager, on the ground of failure to comply with the provisions of paragraph (a) or (b) of the last foregoing subsection ; and if, in any such case, the manager does not define other limits for the said district to the satisfaction of the inspector, the matter shall be determined in manner provided by this Act for settling disputes.

SECTION 15

QUALIFICATIONS OF DEPUTIES.

[New section substituted by the Coal Mines (Officials and Inspections) General Regulations, 1951, No. 848, and a further amendment made by the Coal Mines (Officials and Inspections) General Regulations, 1952, No. 845.]

15.—(1) Subject to the provisions of this section, no person shall be qualified to be appointed or to be a deputy unless—

(a) he is the holder—

- (i) of a first or second-class certificate of competency under this Act ; or
- (ii) of a deputy's certificate granted to him by the Minister of Fuel and Power, after receipt of a report by the Mining Qualifications Board that he possesses the qualifications required under this Act ; and

(b) he has within the last preceding five years obtained certificates, granted as respectively prescribed in rules made by the Board aforesaid, that he was then—

- (i) able to make accurate tests for inflammable gas (so far as is practicable with a flame safety lamp), and able in so far as concerned his hearing to carry out his duties efficiently ; and
- (ii) proficient in first aid :

Provided that, in the case of a deputy in a mine of stratified ironstone (not being a mine in the Cleveland district or a mine in which safety lamps are required to be used), no certificate in pursuance of sub-paragraph (i) of paragraph (b) of this subsection shall be required.

(2) Paragraph (a) and sub-paragraph (ii) of paragraph (b) of the foregoing subsection shall not apply in the case of any person who is, during the period beginning on the first day of June and ending on the thirty-first day of August, nineteen hundred and fifty-two, certified by the manager of a mine to be a person who at some time before the said first day of June had been appointed in writing to perform, and had in fact performed, the duties of a deputy in that mine, and who immediately before that day was fully qualified to perform them.

(3) If, in the case of a small mine, the number of persons who may be appointed deputy is less, by reason of sickness, holidays or other temporary cause, than the number then requisite for full working in the mine, one or more competent persons may be appointed by the manager in writing to perform the duties of a deputy for a period not exceeding three months, so however that notice of any such appointment shall within seven days be sent to the inspector of the division.

(4) Rules made by the Mining Qualifications Board under section nine of this Act shall require an applicant for a deputy's certificate either—

(a) to have—

- (i) reached the qualifying standard in a written examination covering the elementary principles of safe mining practice (including elementary mining science) and the statutory requirements relating to a deputy's duties ;
- (ii) reached the qualifying standard in a practical test of the ability of the applicant to perform the statutory duties of a deputy ;
- (iii) had not less than four years' practical experience below ground in a mine, of which not less than eighteen months was at the face of the workings ; and
- (iv) attained an age not less than twenty-three years ; or

(b) to have—

- (i) reached the qualifying standard in the practical test specified in sub-paragraph (ii) of the foregoing paragraph ;
- (ii) had not less than five years' practical experience below ground in a mine, of which not less than two years was at the face of the workings ; and
- (iii) attained an age not less than twenty-five years :

Provided that the rules may provide for the reduction by the Board of any required period of practical experience, in the case of any applicant possessing special qualifications or experience (including the performance of national service), so however that the practical experience as so reduced shall not be less than three years below ground in a mine, of which not less than one year was at the face of the workings.

(5) In the case of any person obtaining a certificate in pursuance of paragraph (b) of subsection (1) of this section while he is employed as a deputy, the expense of obtaining that certificate shall be borne by the owner of the mine.

(6) A certificate made for the purposes of subsection (2) of this section shall be on a form provided for the purpose by the Minister, and shall, within fourteen days of being made, be authenticated by the owner of the mine, or by a representative of the owner superior to the manager.

(7) The certificates required under this section relating to every deputy employed at any mine (including any certificate made for the purposes of subsection (2)) shall be kept at the office at the mine, and shall be produced on demand to any inspector.

SECTION 18.

RETURNS BY OWNER, AGENT OR MANAGER.

[*New provision substituted for paragraph (b) of subsection (1) by the Workmen's Compensation Act, 1923.*]

18.—(1) On or before the twenty-first day of January in every year, the owner, agent, or manager of every mine shall send to the inspector of the division a correct return, specifying, with respect to the year ending on the preceding thirty-first day of December—

(a) the particulars contained in the form in the First Schedule to this Act, or in such other form as may, from time to time, be prescribed in lieu of that form ;

(b) such particulars as may be prescribed of all accidents which occurred in or about the mine during the year to which the return relates and disabled, for more than three days, any person employed in or about the mine from earning full wages at the work at which he was employed ;

(c) such other particulars as may be prescribed as to the supply and maintenance with respect to the mine of appliances for use in rescue work and ambulance appliances, the formation and training of rescue brigades, and the training of men in ambulance work ; and

(d) such other particulars as the Minister may prescribe by order made in like manner and subject to the like procedure as general regulations under this Act.

SECTION 20.

PLANS OF MINE AND VENTILATION.

[*Amendment made to subsection 20(1), proviso added to subsection (2), new subsection (2A) inserted and new subsection (3) substituted by the Coal Mines (Surveyors and Plans) General Regulations, 1952, No. 1846.*]

20.—(1) Subject to the provisions of any general regulations made under this Act, the owner, agent, or manager of every mine shall keep in the office at the mine—

(i) an accurate plan of the workings of the mine, up to a date not more than three months previously, showing—

(a) the boundaries of the mine, where possible, and the position of the workings with regard to the surface and variations of level on the roadways from the Ordnance basis, being variations of ten feet or any multiple of ten feet ; and

(b) the general direction and rate of dip of the strata ; and

(c) the position, direction, and extent of every known fault of every seam with its vertical throw, and of every known washout and intrusive dyke ; and

(d) the depth of every shaft ; and

(ii) a section of the strata sunk through, or, if that is not reasonably practicable, a section of every seam.

(2) The owner, agent, or manager of every mine shall also keep in the office at the mine a separate plan showing the system of ventilation in the mine, and in particular the general direction of the currents, the points where the quantity of air is measured, and the principal devices for the regulation and distribution of the air, and on every such plan the intake airways shall be coloured blue and the return airways red :

Provided that if the inspector of the division is satisfied that the said information cannot be shown fully and clearly on a plan he may authorise the keeping in substitution therefor of such a drawing as will show the information fully and clearly.

(2A) The owner, agent or manager of every mine shall also keep in the office at the mine a copy of a geological map of the district in which the mine is situated on a scale of six inches to a mile, or, if a map on so large a scale is not available, a map on the nearest scale which shows the boundaries of superficial and drift deposits.

(3) Every such plan shall be on a scale of not less than 1 : 2500, shall show the required information fully and clearly and shall be of a durable character.

(4) The owner, agent, or manager of the mine shall, on request at any time of an inspector, produce to him at the office at the mine such plans and section, and shall also, on the like request, mark on such plans the then state of the workings of the mine as respects the particulars required to be shown on the plan under subsection (1) of this section ; and the inspector shall be entitled to examine the plans and section, and, for official purposes only, to make a copy of any part thereof.

(5) If the owner, agent, or manager of any mine fails to keep, or wilfully refuses to produce or allow to be examined or copied, any such plan or section, or wilfully withholds any portion thereof, or wilfully refuses, on request, to mark thereon the state of the workings of the mine, or conceals any part of those workings, or produces an imperfect or inaccurate plan or section, he shall (unless he shows that he was ignorant of the concealment, imperfection, or inaccuracy) be guilty of an offence against this Act.

Further, the inspector may, by notice in writing (whether a penalty for the offence has or has not been inflicted), require the owner, agent, or manager to cause an accurate plan and section, showing the particulars herein-before required, to be made within a reasonable time at the expense of the owner of the mine in accordance with the provisions herein-before contained, and, if the owner, agent, or manager fails,

within twenty days after the requisition of the inspector or within such further time as may be allowed by the Minister of Fuel and Power, to cause such plan and section to be made as hereby required, he shall be guilty of an offence against this Act.

SECTION 21.

PLANS OF ABANDONED MINES.

[New subsections (1), (2), (3) and (5) substituted and amendment made to subsection (7) by the Coal Mines (Surveyors and Plans) General Regulations, 1952, No. 1846.]

21.—(1) Where any mine or seam is abandoned the person who is the owner of the mine or seam at the time of its abandonment shall within three months after the abandonment send to the Minister of Fuel and Power the plans, drawings and sections of those workings required to be kept in the office at the mine under the last preceding section or under general regulations made under this Act or accurate copies thereof of a durable character on the same scale prepared by or under the supervision of the surveyor for that mine. There shall be included thereon such additional information relating to matters existing at the time of the abandonment as may be specified in rules made by the Minister.

(2) On any plan sent to the Minister under this section there shall be endorsed a certificate by a person who was the manager or agent of the mine at the time of the abandonment of the workings that no further work was carried out after abandonment which would affect the accuracy of the plan.

(2A) On any plan sent to the Minister under this section there shall be endorsed or attached a report of the surveyor for that mine, or if he is not available by another holder of a surveyor's certificate who is employed at that mine or qualified to be appointed the surveyor for that mine, being a report which indicates the extent to which he can certify the accuracy and completeness thereof at the date of abandonment, the steps taken by him to ensure such accuracy and completeness and the reason for any qualification, and may include any information which he considers desirable for the promotion of safety.

(2B) In this section "surveyor's certificate" means a certificate having effect for the purposes of general regulations made under this Act relating to the appointment and duties of surveyors.

(3) Any plans, drawings and sections sent to the Minister under this section shall be preserved by the Minister or on his behalf by a person appointed by him.

(4) No person except an inspector shall be entitled, without the consent of the owner for the time being of the mine or seam, or a licence of the Minister, to see the plan or section whilst preserved as aforesaid

until after the expiration of ten years from the time of the abandonment, but such licence shall not be granted, unless the Minister is satisfied that the inspection of such plan is necessary in the interests of safety.

(5) Where a mine or seam has not been worked for a period of twelve months it shall be deemed for the purposes of this section to have been abandoned without prejudice to the application of any other provision of this Act to anything done therein :

Provided that the preceding provisions of this section shall not apply to any mine or seam so deemed to be abandoned if the inspector of the division has certified that, having regard to the method of working it and to the plans, drawings and sections thereof kept in the office at the mine, compliance with those provisions appears to him to be unnecessary subject to compliance with any requirements specified in the certificate.

(6) If the owner of a mine or seam fails to comply with this section, he shall be guilty of an offence against this Act.

(7) A complaint or information for an offence under this section may be made or laid at any time within six months after abandonment of the mine or seam, or after service on the owner aforesaid of a notice to comply with the requirements of this section or, in the case of an offence relating to the inaccuracy of a plan, within six months of that offence first coming to the notice of an inspector, whichever last happens.

(8) The High Court may, on application by or on behalf of the Minister, make an order requiring any person who has, for the time being, the custody or possession of any plan or section of an abandoned mine or seam to produce it to the Minister for the purpose of inspection or copying.

SECTION 32.

USE OF SAFETY LAMPS IN CERTAIN PLACES.

[*New section substituted by the Coal Mines (Lighting and Contraband) General Regulations, 1949, No. 924.*]

32.—(1) No lamp or light other than a locked safety lamp or such other means of lighting as is permitted by the regulations of the mine shall be allowed or used in any mine—

(a) in any part of which safety lamps were used or required to be used, otherwise than as a temporary precaution, immediately before the first day of January, nineteen hundred and forty-nine, or have been so used on or after that date,

(b) in any part of which any explosion or ignition of inflammable gas, whether or not causing personal injury, has occurred on or after that date,

(c) newly opened after the said date, or

(d) in respect of which the inspector of the division has, not less than one month previously, given notice to the owner, agent, or manager that safety lamps should be installed, unless exemption is granted by the inspector of the division on account of the special character of the mine, or pending the provision of facilities required by virtue of the provisions of this subsection.

(2) A notice under paragraph (d) of the last subsection shall not be unreasonably given and if the owner, agent, or manager disputes the reasonableness thereof the matter shall be determined in manner provided by this Act for settling disputes.

(3) In this section the use of safety lamps "as a temporary precaution" means the occasional or intermittent use of such lamps by workmen employed in places in which the use of naked lights might be dangerous.

SECTION 33.

CONSTRUCTION OF SAFETY LAMPS.

[*Deletion by the Statute Law Revision Act, 1927, and new provision added at end, by the Coal Mines General Regulations (Safety Lamps), 1927, No. 1155.*]

33. Wherever safety lamps are required by this Act or the regulations of the mine to be used, no safety lamp shall be used by any person employed in the mine, unless it is provided by the owner of the mine, and is of a type for the time being approved, as respects the class of mines to which the mine belongs, by the Minister.

As respects any class of mines, or generally, the Minister may approve any type of safety lamp either absolutely or subject to such conditions as may be prescribed.

SECTION 34.

EXAMINATION OF SAFETY LAMPS.

[*New paragraphs (iii), (iv), (v) and (vi) substituted for paragraphs (iii) and (iv) of 34(1), by the Coal Mines General Regulations (Safety Lamps), 1927, No. 1155.*]

34.—(1) In any mine or part of a mine in which safety lamps are required by this Act or the regulations of the mine to be used—

- (i) A safety lamp shall not be used, unless it has, since last in use, been thoroughly examined at the surface by a competent person appointed in writing by the manager for the purpose and found by him in safe working order and securely locked, and a record shall be kept of the men to whom the several lamps are given out :

- (ii) A competent person appointed in writing by the manager for the purpose shall also examine every lamp on its being returned, and, if on such an examination any lamp is found to be damaged, he shall record the nature of the damage in a book to be kept at the mine for the purpose, and the damage shall be deemed to have been due to the neglect or default of the person to whom the lamp was given out, unless he proves that the damage was due to no fault of his own and that he immediately gave notice of the damage to the deputy in charge of the district or some other official of the mine appointed in writing by the manager for the purpose :
- (iii) Subject as hereinafter provided, no safety lamp shall be unlocked or opened, and no person shall use or have in his possession any contrivance for unlocking or opening any safety lamp :

Provided that—

In any mine of stratified ironstone in the Cleveland district an authorised person (that is to say, a competent person appointed in writing by the manager for the purpose of relighting safety lamps) may use and have in his possession a contrivance for unlocking or opening safety lamps, and may unlock, open and relight any safety lamp at an appointed lamp station (that is to say, a lamp station appointed by the manager, which shall not be in a return airway) :

- (iv) No flame safety lamp shall be relighted except by an authorised person at an appointed lamp station, and no contrivance for relighting any flame safety lamp shall be kept at any place except an appointed lamp station or be in the possession or control of any person other than an authorised person :

Provided that this paragraph shall not apply in respect of any flame safety lamp with a relighting device of a type approved by the Minister for use otherwise than by an authorised person at an appointed lamp station, if and so long as the prescribed conditions are complied with :

- (v) An authorised person shall not relight any flame safety lamp unless after examining it he finds it to be undamaged, and after relighting any safety lamp shall not allow it to be used or to remain lighted unless after again examining it he has found it to be securely locked and considers it to be in safe working order :
- (vi) No part of a safety lamp shall be removed by any person whilst the lamp is in ordinary use.

SECTION 35.

PROHIBITION AGAINST POSSESSION OF CERTAIN ARTICLES.

[*New provisions substituted for 35(1) and 35(2), additional subsection 35(5) inserted and verbal amendment of 35(3) made by the Coal Mines (Lighting and Contraband) General Regulations, 1949, No. 924.*]

35.—(1) No person in any mine in which safety lamps are required by this Act or the regulations of the mine to be used and no person in any mine to whom a safety lamp is issued for use as a temporary precaution shall have in his possession any article prohibited under this section.

(2) The manager of a mine shall, for the purpose of ensuring that the last preceding subsection is complied with, cause either all the persons employed in that mine to whom that subsection applies, or such of them as may be selected on a system approved by the inspector of the division, to be searched in the prescribed manner immediately before or as soon as practicable after entering the mine and may for that purpose cause any person to be so searched at any time at which that subsection applies to him.

(3) No person shall search any workman in pursuance of this section unless he has previously given an opportunity to some two workmen employed in the mine to search himself, and no article prohibited under this section has been found on him.

(5) In this section—

“article prohibited under this section” means any cigar, cigarette, pipe or contrivance for smoking, and any match or other article that produces or is capable of producing a light, flame or spark, except an article of a description authorised to be taken below ground by this Act or by the Minister of Fuel and Power or the inspector of the division ;

“temporary precaution” has the meaning assigned thereto by section thirty-two of this Act.

SECTION 40.

PROVISION OF WINDING APPARATUS.

[*New provisions substituted for 40(2) and 40(10) by the Coal Mines General Regulations (Winding and Haulage), 1937, No. 143, and for 40(5) by the Coal Mines (Winding and Haulage) General Regulations, 1948, No. 302.*]

40.—(2) Where the apparatus ordinarily used for raising or lowering persons to or from the surface is worked by mechanical power it shall, if the shaft is vertical, be provided with detaching gear for each cage ; and if the maximum speed of winding can exceed twelve feet per second shall also be provided with an effective automatic contrivance to

prevent overwinding, hereinafter called the automatic contrivance. The automatic contrivance shall at all times when persons are being raised or lowered prevent the descending cage from being landed at the pit bottom or other permanent landing at a speed exceeding five feet per second and shall also control the movement of the ascending cage in such manner as to prevent danger to persons riding therein.

The requirements of this subsection shall not apply to any mine which is exempted by the Minister on the ground of special circumstances.

(5) No winding rope which has been in use for more than three and a half years, or which has been spliced, shall be used in a shaft in which persons are raised or lowered :

Provided that the Minister may permit the use of a winding rope for more than three and a half years if he is satisfied that, having regard to its character and to the extent to which, and the conditions in which, it has been used, its use may be continued for a further period without danger.

Any permit granted by the Minister under this subsection shall be in writing and may be granted for such period, on such terms and subject to such conditions as the Minister thinks fit ; and the Minister may revoke or vary any permit at any time.

Every winding rope shall be recapped at intervals of not more than six months in accordance with any relevant provisions contained in general regulations made in pursuance of this Act.

(10) Where the apparatus used for raising or lowering persons is worked by mechanical power, there shall be provided

(a) one or more brakes on the drum shaft which, if there are two cages, will hold the cages when the maximum torque is applied in either direction when the loads are balanced, or, if there is only one cage, will hold the loaded cage in mid shaft when the maximum torque is applied downwards ; and

(b) a proper indicator (in addition to a mark on the rope or drum) showing to the winding engineman on a dial or in some sufficient manner, the position of the cage in the shaft, and placed in such a position as to be easily seen by him at the same time as the mark on the rope or drum.

SECTION 42.

TRAVELLING ROADS AND HAULAGE.

[*Verbal amendments of 42(2) by the Coal Mines Act, 1914, and to 42(4) by the Coal Mines (Locomotives) General Regulations, 1949, No. 530.*]

42.—(2) For every seam in a mine newly opened after the commencement of this Act which is exempted by general regulations from the foregoing provisions of this section, and for every seam in a mine

opened before the commencement of this Act, there shall be provided two main airways, which shall be of such size and shall be maintained in such condition as to afford a ready means of ingress to and egress from the workings.

(4) Where, in the case of any mine or seam newly opened after the passing of this Act, the air-current in the main return airway is found normally to contain more than one half per cent. of inflammable gas, that airway shall not (except with the consent of the Minister of Fuel and Power or for the purpose of removing any coal gotten in the operation of enlarging or repairing the airway, or within a distance of three hundred yards from the shaft) be used for the haulage of coal.

For the purpose of this provision, the average percentage of inflammable gas found in six samples taken by an inspector in the air-current at intervals of not less than a fortnight shall be deemed to be the percentage normally contained in the air-current.

SECTION 44.

PROVISION OF REFUGE HOLES.

[*New provisions substituted for 44(1) by the Coal Mines (Winding and Haulage) General Regulations, 1948, No. 302.*]

44.—(1) Every haulage road on which the haulage is worked by gravity or mechanical power shall be provided with sufficient refuge holes—

(a) at intervals of not more than ten yards ; or

(b) if the gradient does not exceed one in twenty, and either there is provided on one side of the road a clear space of at least two feet in width between the tubs and that side of the road or the rate of haulage is not more than three miles an hour, at intervals of not more than twenty yards ; or

(c) as may be fixed by the regulations of the mine.

SECTION 45.

DIMENSIONS OF TRAVELLING ROADS.

[*Verbal amendments of 45(2) by the Coal Mines General Regulations, 1922, No. 113.*]

45.—(2) Every road on which a horse or other animal is used underground or by which it has to pass shall be of sufficient dimensions to allow the horse or other animal to pass without rubbing itself or its harness against the roof or sides or the bars or props supporting the roof or sides.

SECTION 50.

SYSTEMATIC SUPPORT OF ROOF AND SIDES.

[Verbal amendments in subsections (1), (2), (3) and (7) and new subsections (4), (4A), (4B), (4C), (4D) and (4E) substituted for subsection (4), by the Coal Mines (Support of Roof and Sides) General Regulations, 1947, No. 973. The Regulations also define certain terms as indicated in footnote]*

50.—(1) Where props or props and bars or chocks are used to support the roof at the working face, the roof under which any work of getting coal or filling tubs is carried on shall be systematically and adequately supported, and the props or chocks shall be set at such regular intervals and in such manner as may be specified in the Support Rules.

(2) Holing props or sprags shall be set as soon as practicable, and shall be set at such regular intervals and in such manner as may be specified in the Support Rules, and shall not be removed until the coal is about to be taken down and before the roof supports (if any) have been advanced in the manner specified in such Rules.

(3) In all parts of a roadway in which sets or trains consisting of three or more tubs are coupled or uncoupled, the roof and sides shall be systematically and adequately supported and in such parts and in all other parts of the roadway the roof or sides of which require to be supported, if props or bars are used as supports, such supports shall be set at such regular intervals and in such manner as may be specified in the Support Rules.

(4) The manager shall make rules (in this Act referred to as the "Support Rules") specifying in relation to each seam of the mine,

* "bar" includes girder;

"face" means, in relation to a seam, the exposed surface from which coal or other mineral is won; and means, in relation to a stone drift or a ripping, the exposed surface from which the stone is worked;

"face working" means, in relation to a face at which supports are systematically withdrawn, all that part of the mine between the face and the front line of the packs (if any) or the last row of supports for the time being maintained, whichever is the farther from the face; and means, in relation to a face at which supports are not systematically withdrawn, all that part of the mine between the face and a line parallel to it and twelve feet distant from it;

"ripping" means a place where material is worked from the roof or floor for the purpose of increasing the height of a road or of obtaining material for packing;

"ripping lip" means the edge where the face of a ripping joins the former level of the roof or floor;

"road" means any part of a passage which is maintained in connection with the working of the mine, except that part which is within ten yards of the face;

"roadhead" means, in relation to a road which leads to a face of a seam, all that part of the mine between the end of the road nearest the face and that face and of the same width throughout as that roadend;

"waste" means the space outside any face working, road or roadhead and not occupied by packs, from which the coal or other material has been extracted.

particulars of the system or systems of controlling and supporting the roof and sides to be carried out in connection with the face workings, the roadheads and the roads, respectively, and shall illustrate those particulars by such plans and sections or diagrams as are necessary to make them clearly and easily understood by the persons engaged in carrying out any such system.

(4A) The manager shall also specify in the Support Rules the maximum intervals to be observed—

- (a) between the supports on roads where required ;
- (b) between the holing props or sprags ; so however that the interval between such props or sprags shall not exceed six feet ;
- (c) in respect of bars or props in a face working or roadhead :—
 - (i) between each row of props ;
 - (ii) between adjacent props in the same row ;
 - (iii) between adjacent bars in the same row ;
 - (iv) between the front row of props and the face at any part of the face where filling has been completed ;
 - (v) between the front props and the temporary supports set in advance thereof ;

so however that such intervals, unless the inspector of the division otherwise authorises in writing, shall not exceed—

- (vi) four feet between each row of props, or six feet if bars are used at distances not exceeding four feet between adjacent bars in the same row ;
- (vii) four feet between adjacent props in the same row, and, if bars are required to be used by these Regulations, between adjacent bars in the same row ;
- (viii) three feet between the front row of props and the face at any part of the face where filling has been completed ;
- (ix) three feet between front props and the temporary supports set in advance thereof :

Provided that the provisions of sub-paragraphs (vi) and (vii) of this paragraph shall not apply in respect of roadheads in workings other than longwall workings : and

Provided also that in places where the use of machinery for cutting or loading makes it temporarily impracticable to comply fully with the requirements of the provisions of sub-paragraphs (viii) and (ix) of this paragraph, those requirements shall be modified to the extent that supports may be removed, over such limited distance as is necessary, from the path of travel of the machine, if supports complying fully with those requirements are set as soon as practicable after the machine has passed : and

Provided also that if the manager objects to a decision of the

inspector as aforesaid the matter shall be settled in manner provided by this Act for settling disputes ;

(d) in respect of chocks set systematically in rows in a face working or roadhead—

- (i) between each row of chocks ;
- (ii) between adjacent chocks in the same row ;
- (iii) between the front row of chocks and the face ;
- (iv) in advance of the front chocks at which temporary supports are to be set.

(4B) The manager shall also, in connection with such particulars as aforesaid as relate to the roadhead, specify in the Support Rules the method of supporting—

(a) the roof between the face and the ripping lip, if any, farthest from the face ;

(b) the roof between the ripping lip, if any, farthest from the face and the end of the roadhead ;

(c) the face or faces of rippings ;

(d) the roof newly exposed by ripping.

(4c) Where it is part of the system of work to withdraw the supports from the waste or from under the roof adjoining the waste, the manager shall also specify in the Support Rules the system of withdrawing the supports and the intervals between the supports which are to be set and maintained with a view to preventing the roof breaking down over the face working or in any place other than in the waste.

(4D) A copy of so much of the Support Rules as applies to each district of the mine shall be—

(a) posted at the entrance thereto in such a position that it can easily be read by every person concerned ;

(b) supplied to the deputy in charge of the district.

(4E) The Support Rules shall be kept at the office at the mine and a copy thereof purporting to be certified by the manager for the time being as a true copy shall be received in evidence without further proof.

(7) Nothing in this section shall prevent a workman from setting supports in his working place at more frequent intervals than those specified in the Support Rules where necessary for safety.

SECTION 58.

RESTRICTION ON USE OF INTERNAL COMBUSTION ENGINES.

[*New section substituted by the Coal Mines (Locomotives) General Regulations, 1949, No. 530.*]

58.—(1) No locomotive or other vehicle for which motive power is

supplied by an internal combustion engine, compressed air or electric power shall be used below ground in any mine otherwise than in accordance with the regulations of the mine.

(2) Save as provided in the foregoing subsection, no internal combustion engine shall be used below ground in any mine except with the consent of the Minister of Fuel and Power and subject to any conditions imposed by him.

SECTION 62.

PREVENTION OF COAL DUST.

[*Deletion in 62(2) by Statute Law Revision Act, 1950 : new provision substituted for 62(3) by the Coal Mines General Regulations (Precautions against Coal Dust), 1939, No. 1803.*]

62.—(2) the tubs shall be so constructed and maintained as to prevent, as far as practicable, coal dust escaping through the sides, ends, or floor of the tubs ;

(3) the dust on the floor of every travelling road and conveyor road (including the space beneath the conveyor) shall be systematically cleared so as to prevent all accumulations thereof so far as is reasonably practicable, or shall be systematically treated in a manner approved by the Minister so as to consolidate it and render it indispersable.

SECTION 63.

MEETING STATIONS.

[*New section substituted by the Coal Mines (Officials and Inspections) General Regulations, 1951, No. 848.*]

63.—(1) For the purposes of the pre-shift inspections hereinafter mentioned, the manager shall appoint a station at one entrance to each deputy's district (in this Act, in relation to the district concerned, referred to as the "meeting station") ; and no workman shall pass beyond the meeting station of, or enter, any such district unless it has, within the previous eight hours, been examined in pursuance of the next following section, and has been reported to be safe :

Provided that nothing in this subsection shall prevent any deputy being accompanied during any such inspection by one competent workman as an assistant.

(2) The inspector of the division may object to the situation of any meeting station appointed by the manager, on the ground that as so situate the station does not provide adequately for the safety of workmen ; and, if, in any such case, the manager does not appoint another meeting station to the satisfaction of the inspector, the matter shall be determined in manner provided by this Act for settling disputes.

SECTION 64.

PRE-SHIFT INSPECTIONS.

[*New section substituted by the Coal Mines (Officials and Inspections) General Regulations, 1951, No. 848.*]

64.—(1) Within the two hours immediately before the commencement of work in any shift during which workmen are to enter any deputy's district, the deputy to whom that district is assigned for that shift, or the deputy to whom it was assigned for the last preceding shift, shall himself ascertain, by inspection of every part of it which is required to be ventilated, the condition of every such part in so far as the presence of gas, ventilation, state of roof and sides and general safety are concerned :

Provided that, while there are workmen continuously in any district, inspections of that district shall not be required to be made under this section more frequently than once in every eight hours.

(2) An inspection required to be made under this section is in this Act referred to as a "pre-shift inspection".

(3) In mines of stratified ironstone, a pre-shift inspection or an inspection under section sixty-five of this Act may, with the consent in writing of the inspector of the division, be made by two deputies together (one of them being the deputy to whom the district is assigned). And, in relation to any inspection so made, the provisions of this section and of the said section sixty-five shall apply as if references to the deputy concerned, or to the deputy in charge of the district, were references to the two deputies making the inspection.

(4) Except in mines of stratified ironstone (not being mines in the Cleveland district, or mines in which safety lamps are required to be used), a deputy making any pre-shift inspection shall have with him, locked, a flame safety lamp and an electric safety lamp, or one safety lamp combining the two, each such lamp being of a type approved* for the purpose by the Minister of Fuel and Power, and no other light shall be used by him during the inspection.

No light shall be used by the workman (if any) accompanying the deputy unless it is a safety lamp of a type approved for general use.

(5) On the completion of each pre-shift inspection, the deputy concerned shall—

(a) without delay, record in a book to be kept at the mine for the purpose a full and accurate report thereof (to be known for the purposes of this Act as his "pre-shift report"), which shall, except in so far as it consists of printed matter, be in his handwriting, and shall be signed by him, specifying—

(i) the condition of roof and sides, and of the ventilation, in the district ; and

* See page 252.

(ii) whether or not there have been found therein any noxious or inflammable gas, or other sources of danger, and, if found, particulars of the same ; and

(b) cause all requisite instructions relating to safety to be given at the meeting station to the workmen who are to enter the district.

SECTION 65.

INSPECTIONS DURING SHIFTS.

[*New section substituted by the Coal Mines (Officials and Inspections) General Regulations, 1951, No. 848.*]

65.—(1) Each deputy's district in which there are workmen at work shall, subject to the provisions of subsection (3) of section sixty-four of this Act, be inspected by the deputy in charge of it at least twice during each shift ; and—

(a) no place where workmen are at work shall remain un-inspected for more than four hours ;

(b) if any part of the district remains without any workman being at work in it for two hours or more after the pre-shift inspection, no workman shall enter that part unless—

(i) the part has been inspected under this section within the previous two hours ; and

(ii) the workman has received from the deputy concerned all requisite instructions relating to safety.

(2) In cases where, by virtue of the proviso to subsection (1) of the said section sixty-four, there has with respect to the shift of any workmen been no pre-shift inspection, references in the foregoing subsection to a shift shall be construed as references to a period of eight hours immediately following the completion of a pre-shift inspection.

(3) An inspection under this section shall be similar to a pre-shift inspection, save that—

(a) it need not extend to any development working which the manager has caused to be marked with a notice as a working not for the time being to be continued ; and

(b) a report thereof (other than any general report made by the deputy concerned on the performance of his duties) shall not be required.

(4) An inspection made under this section may also be a pre-shift inspection of the district for the purposes of the succeeding shift, so however that, in any such case, nothing in the last foregoing subsection shall affect the requirements of section sixty-four.

SECTION 66.

EXAMINATION OF MACHINERY, ROADS, AIRWAYS, ETC.

[Section 66 renumbered 66(1) with verbal amendments, and additional subsections (2), (3) and (4) inserted by the Coal Mines (Officials and Inspections) General Regulations, 1951, No. 848.]

66.—(1) Competent persons appointed by the manager for the purpose, shall—

(a) once at least in every twenty-four hours, examine thoroughly the state of the external parts of the machinery, the state of the guides in the shafts, and the state of the head gear, ropes, chains, cages, and other similar appliances of the mine which are in actual use for the purpose of raising or lowering persons in a mine ; and

(b) once at least in every week, examine thoroughly the state of all other machinery, gear, and other appliances of the mine which are actually in use, whether above ground or below ground ; and

(c) once at least in every week, examine thoroughly the state of the shafts in which persons are lowered or raised ;

and shall make a full and accurate report of the result of the examination, and every such report shall be recorded without delay in a book to be kept at the mine for the purpose and accessible to the workmen, and shall be signed by the person who made the examination.

(2) Inspections by competent persons appointed by the manager for the purpose (each being qualified under this Act to be a deputy) shall be made—

(a) to the extent necessary for a thorough examination of its condition, of—

(i) every working place specified in the next following subsection (not being within the limits of any deputy's district), at the beginning of each shift during which any workman is to be at the working place and, in addition, at least once during each such shift ;

(ii) every place where persons regularly pass (not being within the limits of any deputy's district), at intervals not exceeding twenty-four hours ; and

(iii) every airway, at intervals not exceeding seven days ; and

(b) to the extent necessary to ensure that it is fit and safe for travelling, of every road or part of a road not otherwise subject to inspection under this subsection, at intervals not exceeding seven days :

Provided that the requirement in this subsection that each competent person shall be qualified under this Act to be a deputy shall not have effect until the first day of December, nineteen hundred and fifty-four.

(3) The working places referred to in sub-paragraph (i) of paragraph (a) of the last foregoing subsection are all places at which any workman is—

(a) working mineral or stone for the purpose of repairing, restoring or enlarging roads, or of preparing accommodation required for the working of the mine ;

(b) withdrawing equipment, plant or supports in preparation for the abandonment of the place concerned ; or

(c) working where persons do not regularly pass.

(4) The provisions of subsection (1) regarding reports shall with the requisite modifications apply in relation to inspections under subsection (2) of this section, as they apply in relation to examinations under subsection (1).

SECTION 70.

PROVISION OF MEANS FOR EXTINGUISHING FIRE.

[*Verbal amendment by the Coal Mines Act, 1914.*]

70. At all parts of a mine where timber, grease, or other inflammable material is stored, and at all insets where timber is used for the construction of the staging, and at every pit-head, engine-room, and boiler gallery in the construction of which timber is used, adequate means of extinguishing fire shall be provided.

SECTION 75.

PENALTIES FOR NON-COMPLIANCE WITH PROVISIONS AS TO SAFETY.

[*Verbal amendments by the Coal Mines (Support of Roof and Sides) General Regulations, 1947, No. 973.*]

75. Any person who contravenes or does not comply with any of the provisions of this Part of this Act or of the Support Rules shall be guilty of an offence against this Act, and, in the event of any contravention of or non-compliance with any of the provisions of this Part of this Act or of the Support Rules by any person whomsoever, the owner, agent, and manager of the mine shall each be guilty of an offence against this Act, unless he proves that he had taken all reasonable means by publishing and to the best of his power enforcing those provisions to prevent that contravention or non-compliance.

SECTION 86.

GENERAL REGULATIONS.

[*Verbal amendments of 86(1) and (2) by Section 11 of the Coal Industry Act, 1949.**]

86.—(1) The Minister of Fuel and Power may by order make such general regulations for the conduct and guidance of the persons acting in the management of mines or employed in or about mines as may appear best calculated to prevent dangerous accidents and to provide for the safety, health, convenience and proper discipline of the persons employed in or about mines, and for the care and treatment of horses and other animals used therein, and any such regulations may vary, amend or replace any of the provisions contained in Part II of, or the Third Schedule to, this Act.

(2) The regulations made under any such order may apply either to all mines or to any specified class or description of mines, and may provide for the exemption, either absolutely or subject to conditions, of a particular mine or a specified class or description of mines or of part of a particular mine, parts of all mines or parts of mines of a specified class or description.

SECTION 114.

POWERS OF MINISTER AS TO MAKING AND REVOKING ORDERS.

[*Verbal amendment by the Coal Mines Act, 1914.*]

114. Any order of, or any exemption granted by, the Minister under this Act may be made or granted and from time to time revoked or altered by the Minister, either unconditionally or subject to such conditions as he may see fit, and shall be signed by the Minister or an under-secretary or assistant under-secretary.

THIRD SCHEDULE.

CARE AND TREATMENT OF ANIMALS.

[*As amended by the Coal Mines General Regulations, 1922, No. 113, and the Coal Mines (Horses) General Regulations, 1949, No. 2330.*]

1.—(1) No horse shall be taken underground until it is four years old and until it has been tested by a duly qualified veterinary surgeon in the prescribed manner and certified to be free from glanders.

* This Act (Section 9) also provides that the Minister's power to make General Regulations under Section 86(1) of the 1911 Act shall include power to make such regulations in respect of management matters as it appears to him to be requisite or expedient to make having regard to the needs of the mining industry, changes in the methods of mining, the progress of education and training and the results of research. Such regulations may vary, amend or replace any of the provisions in Part I of the 1911 Act.

(2) Every horse shall be examined once at least in every twelve months by a duly qualified veterinary surgeon ; and a report of each such examination (including a certificate of the fitness or unfitness of the horse for work or for work in the mine) shall be recorded in the book to be kept by the horse-keeper in pursuance of regulation thirteen and shall be signed by the veterinary surgeon.

(3) Any horse certified as aforesaid to be permanently unfit for work or for work in the mine shall as soon as practicable be brought to the surface.

(4) No horse certified as aforesaid to be unfit for work shall be disposed of alive otherwise than for immediate destruction or to a home of rest maintained for the reception of animals not then fitted for work or to a responsible person not carrying on the business of dealing in horses.

2.—(1) Each horse underground shall be housed in a stall adequate for the size of the horse in a stable constructed and maintained as provided in the next following regulation.

(2) A sufficient supply of clean straw or other suitable bedding shall be provided for every horse in any stable.

(3) All stables in use shall be cleaned daily and kept in a sanitary condition.

3.—(1) No stable shall be used to house any horse unless—

(a) it is separated from any road used for travelling or the haulage of minerals ;

(b) it is adequately lit ;

(c) it is continuously and thoroughly ventilated with intake air ;

(d) one loose box, of sufficient length, height and width to house the largest horse for the time being below ground in that district of the mine, is provided, at the return end of the stable, for every twenty-five horses in the stable ;

(e) it is fitted with one or more drinking troughs which can be easily drained and cleaned the aggregate length and capacity whereof are sufficient for the horses for the time being housed in the stable ;

(f) the floor throughout is of paving or concrete ; and suitable drainage is provided for every stall and loose box ;

(g) all roofs, walls and partitions not painted or made of slate, tiles, glazed brick or iron are limewashed once at least in every three months.

(2) No stall shall be constructed or adapted to accommodate more than one horse.

(3) No stall shall be used unless it is fitted with a manger.

4.—Competent persons, hereinafter referred to as “ horse-keepers ”, shall be appointed in writing by the manager to have the care of the horses used underground while in the stables, and of the stables, in the proportion of at least one horse-keeper to every fifteen horses.

5.—(1) A sufficient supply of wholesome food and pure water shall be provided daily for every horse while in the stable and while at work which shall so far as practicable be uncontaminated by dust or other deleterious substances when the horse has access to it.

(2) Without prejudice to the generality of the foregoing paragraph, all receptacles for any such food or water as aforesaid shall so far as practicable be so constructed as to protect the contents from dust and other deleterious substances.

6. A sufficient supply of suitable medicines, ointments, and dressings, and a suitable appliance or appliances for the destruction of horses requiring to be destroyed, shall be provided and kept readily available for use.

7. No horse shall be worked, or allowed by the horse-keeper to go out to work in an unfit condition, or improperly shod, or otherwise than with harness properly fitting and in good condition, including a guard for the eyes.

7a.—No horse shall be out of its stable for the purposes of work during any period—

- (a) of twenty-four hours, for more than two shifts,
- (b) of forty-eight hours, for more than three shifts, or
- (c) of seven days, for more than seven shifts or for more than forty-eight hours in the aggregate :

Provided that nothing in this paragraph shall restrict the working of any horse where necessary by reason of unforeseen circumstances for the purpose of

- (i) saving life ;
- (ii) remedying the effect of an accident ; or
- (iii) preventing serious interference with the working of the mine.

8.—(1) The driver having charge of any horse shall remain in charge of the horse during the whole time that it is out of its stable for the purposes of work during his shift and shall, if the period thereof exceeds four hours, ensure that the horse is fed and watered during that period, and, unless otherwise ordered, shall at the end of the shift return the horse to the horse-keeper at the stable.

(2) No horse out of its stable for the purposes of work shall be left unattended by the driver having charge of it unless it is properly secured.

9. No blind horse shall be worked in a mine.

10. The driver having charge of any horse shall, as soon as practicable, report to the official under whose direction he works and to the horse-keeper responsible for that horse any injury to or overworking of the horse, any insufficiency in the supply of food or water in any working place, any case in which the horse or harness rubs against the

roof or sides, or in which the harness or the shoeing is defective, and any other matter affecting the care or treatment of that horse.

11. The horse-keeper shall, as soon as practicable after the return of any horse to the stable, examine the horse and its harness, attend to any injury to the horse, and clean and groom it himself, or cause it to be cleaned and groomed.

12. Every official under whose direction the driver of any horse works and every horse-keeper shall at once report to the manager or under-manager any case of sickness in or injury to or any marks of ill-treatment on or any overworking of any horse coming to his notice, and any defect in the harness likely to cause pain or injury to the horse, and no horse with respect to which any such report is made shall be allowed to go out to work until authority in that behalf is given by the manager or under-manager.

13.—(1) Every horse-keeper shall keep a record in a book to be kept at the mine of all horses under his care, and shall make a daily report therein as to the condition of each horse, the driver in whose charge it has been, the time at which it was taken from the stables, the time at which it was returned thereto and the nature and extent of any working of the horse by virtue of the proviso to regulation 7a.

(2) Every horse-keeper shall, in addition to the matters required to be recorded as aforesaid, record any report made to or by him under the provisions of regulation ten or twelve (including a report of any action taken in relation to any complaint made to or by him).

(3) Where any report is made in pursuance of paragraph (2) of regulation one that any horse is permanently unfit for work, or for work in the mine, a record thereof and of the manner in which that horse is disposed of shall be made by a person appointed in writing for the purpose by the manager in the book in which the record relating to that horse is kept in pursuance of paragraph (1) of this regulation.

14. Every book kept by a horse-keeper under the foregoing provisions of this schedule shall be open to inspection by any special inspector.

15. The manager shall, by himself or by some competent person appointed by him for the purpose, exercise such personal supervision over all horse-keepers, drivers, and other persons employed in connection with the horses used in the mine as is necessary to secure that the provisions of this Act relating to the care and treatment of horses in mines are observed in the mine.

16. The owner, agent, or manager shall, as part of the return required to be made annually to the inspector of the division, furnish a statement showing the number of horses used in the mine, the number which have died during the year from injury by accident or from disease, or which required to be destroyed in consequence of injury or disease, the number of other cases of injury or ill-treatment reported to the manager under the provisions of this schedule, the number disposed

of as unfit for work in the mine but fit for other work, and the number disposed of as unfit for work of any kind but not for immediate destruction.

17. In this schedule the expression “ horse ” includes pony, mule, and donkey.

18. No horse shall be taken into or out of any part of a mine upon a bogie or other carriage excepting in a case of necessity arising through accident, or through injury to or illness of the horse ; provided that nothing in this regulation shall apply to the lowering or raising of a horse either through a shaft or by way of an incline where a horse could not walk with safety owing to the gradient.

TITLE OF DEPUTY.

The Coal Mines (Officials and Inspections) General Regulations, 1951, No. 848, substituted the title “ deputy ” for the alternative titles “ fireman, examiner or deputy ” in a number of sections of the Act. The sections to be amended, together with the existing and the substituted expressions are indicated below.

| Number of Section. | Existing expression. | Substituted expression. |
|-------------------------|---|--------------------------------------|
| 16(2) | “ firemen, examiners or deputies ” | “ deputies ” |
| 16(3) | “ firemen, examiners or deputies ” | “ deputies ” |
| 27(1) | “ firemen, examiners or deputies ” | “ deputies ” |
| 27(1) | “ fireman, examiner or deputy ” | “ deputy ” |
| *34(1) (ii) ... | “ fireman, examiner or deputy ” | “ deputy in charge of the district ” |
| *50(4D) | “ fireman, examiner or deputy of the district ” | “ deputy in charge of the district ” |
| 51 | “ the firemen, examiners or deputies ” | “ each deputy concerned ” |
| 52(2) | “ a fireman, examiner or deputy ” | “ any deputy concerned ” |
| 52(2) | “ the firemen, examiners and deputies ” | “ each such deputy ” |
| 67(1) (twice) ... | “ fireman, examiner or deputy ” | “ deputy ” |
| 67(4) | “ fireman, examiner or deputy ” | “ deputy concerned ” |

* These amendments are incorporated in the amended version of those sections concerned which are contained in this volume.

WORDS DELETED BY STATUTE LAW REVISION ACTS, 1927 AND 1950.

The Statute Law Revision Acts delete words from various statutes because they no longer have an significance, as for example when a provision had effect only for a limited period of time and that time has now run out. The words deleted by the Statute Law Revision Act, 1927, from those sections of the Coal Mines Act, 1911, which have not been subsequently amended are shown in the following table.

| Number of Section | Words deleted |
|-------------------|--|
| 4(1) ... | From the beginning to “ and thirteen ”. |
| 31(3) ... | From the beginning to “ inspector of the division ”. |
| 43(1) ... | From the beginning to “ and fourteen ”. |
| 43(3) ... | From “ The Provisions of this ” to the end. |
| 57(3) ... | “ After the prescribed date and ”. |
| 91 ... | From “ Nothing in this section ” to the end. |
| 123 ... | The whole of paragraph (a). |
| 126 ... | From the beginning to “ Provided that”, and the whole of paragraphs (b) and (c). |
| 127(2) ... | The whole subsection. |
| 4th Schedule | The whole schedule. |

The only amendment to the Coal Mines Act made by the Statute Law Revision Act, 1950, was in Section 62, and the words deleted have been omitted from the amended version of the section which appears on page 25.

PART TWO

REGULATIONS AND ORDERS.

(Note.—All the regulations included here were made under Section 86 of the Coal Mines Act, 1911. The authority under which an order was made is indicated under the title of the order.)

A. GENERAL CODE OF REGULATIONS, 1913, No. 748.

PART I.

DUTIES OF OFFICIALS AND WORKMEN.

General.

1. It shall be the duty of the manager and under-manager to carry out and to the best of their ability enforce the provisions of every order in force under the Act regulating the supply, use and storage of explosives,* and it shall be the duty of all persons employed in or about the mine to comply with the provisions of the said orders.

2. Every notice required by the regulations of the mine to be posted up shall be posted up in some conspicuous place where it may be conveniently read or seen by the persons affected, and so often as it becomes defaced, obliterated or destroyed, shall be renewed with all reasonable despatch.

3. No person shall enter the cage until authorised to do so by the onsetter or banksman, as the case may be; or leave the cage until it shall have stopped at the landing place, and persons while waiting at the top or bottom of the shaft or any entrance into the shaft or while in the cage shall behave in an orderly manner and shall obey the directions of the banksman or onsetter, as the case may be, and shall not impede the banksman or onsetter in the discharge of his duties.

The banksman or onsetter, as the case may be, shall not when persons are being raised or lowered signal the cage away until the gates or other rigid fences with which the cage is provided are in position, and no person other than an official or person authorised in writing by the manager to give signals shall while riding in the cage interfere with the gates or fences.

4. Subject to any directions that may be given by any official of the mine, no workman shall, except so far as may be necessary for the purpose of getting to and from his work or in case of emergency or other justifiable cause necessarily connected with his employment, go into any part of the mine other than that part in which he works, or travel to or from his work by any road other than the proper travelling road.

* See page 75.

5. Every workman engaged at the face, or in stonework, or in timbering, shall carefully examine his working place before commencing work and before recommencing work after the firing of a shot, and after any interruption of work during the shift. Where several persons are working together and one of them is in charge, the examinations required by this regulation shall be made by the man in charge.

6. Where the work of erecting the supports of the roof and sides of working places is done by the workmen employed therein, it shall be the duty of the workmen to carry out the requirements of Section 50 of the Act, and to comply with the directions contained in the notice required by that section.

7. If any person shall cause, or become aware of, any obstruction in or interference with the ventilation, or of any stagnation or impurity in the air, of any part of the mine, or of any dangerous defect in any part of the roof or sides, or of any other source of danger, he shall, if it falls within the scope of his duties to remedy such obstruction, interference, stagnation, impurity, defect, or other source of danger, immediately proceed to take the steps necessary for the purpose, and if not he shall immediately inform the manager, under-manager, deputy in charge of the district or some other official, and shall, if he is working at the place where the danger exists, cease all work at that place.

8. If a sufficient supply of material for supporting the roof and sides of any working place is not available at the place appointed by the Act, the workman shall withdraw from the working place and report the circumstances to the deputy in charge of the district or some other official, and a note of the report shall be entered by the person to whom it is made in the report for the day, if any, which he may be required to make.

9. No person shall, without authority, pass beyond any fence or danger signal or open any locked door.

10. No person shall deface or remove any notice which may be set up, or any marks which may be made in any part of the workings for the guidance of the workmen or for any other proper purpose connected with the working of the mine.

11. No person shall brush or waft out gas.

12. No person shall allow any burning wick or part of a wick or other burning material to lie about in the mine, and every workman on leaving his working place shall take his light or lights with him.

13. Every person using a safety lamp shall examine the same externally, and assure himself that it is locked and in good order before entering the mine, and shall from time to time while in the mine examine the lamp to see that it is in safe working order; and he shall, when he has completed his shift, return the lamp to the lamp-room. If the lamp is injured, while in his possession, he shall at once carefully extinguish the light.

14. No person shall place a safety lamp on its bottom unless it is necessary to do so for the safe performance of any particular work or unless authorised by the manager ; and in all cases whilst a person is at work it shall be placed at least two feet from the swing of the pick, hammer or other tool.

15. Should any person find himself in the presence of inflammable gas, he shall not throw away his lamp or attempt to blow it out but shall shelter it, hold the lamp near the floor, avoid jerking it, and take it steadily into fresh air. If the gas fires in the lamp where he cannot take it into fresh air, he shall smother out the light or extinguish it in water.

16. No person shall when trying or examining for the presence of gas with a safety lamp, raise the lamp higher than may be necessary to allow the presence of gas to be detected.

17. Every workman working at the face shall to the best of his power carry on his work so as at all times to leave a free passage for the air current. He shall also to the best of his power leave his working place at the end of his shift in such condition as to allow of work being safely resumed therein ; and if he finds it impossible to do so he shall fence it off and report the fact as soon as possible to the deputy in charge of the district or some other official.

18. (*Revoked. See new provision in No. 11 of the Coal Mines (Ventilation) General Regulations, 1947, page 179.*)

19. No person shall sleep whilst below ground in the mine or whilst in charge of any winding, hauling, ventilating, or signalling machinery or apparatus, or boilers.

20. No unauthorised person shall work or interfere with any signalling apparatus in or about the mine.

21. (a) The onsetter at any entrance into a shaft which is provided with a fence not worked by the cage or cages, shall not begin to remove the fence until either the cage is stopped at the entrance or it has reached such a position in the shaft that by the time the fence is removed the cage will be opposite the entrance, and shall close the fence immediately he has signalled the cage away, and shall not permit any other person to remove the fence while he is on duty.

(b) Reasonable protection against things falling down the shaft shall be provided for persons engaged in loading or unloading cages.

22. No person shall attempt to go on or across the uncovered space of the shaft bottom, except for the purpose of working in the shaft bottom, and no person shall be allowed to work in such space unless the cages are stopped.

23. Trains run for the conveyance of workmen, whether above or below ground and whether on the premises of a mine or on a line or

siding to which Section 111 of the Act applies,* shall be under the entire control of a person appointed to accompany and have charge of the train, and no person shall attempt to get into or out of the train when in motion nor ride upon the footboard (if any) or upon the buffers or couplings, nor refuse to comply with the direction of the person in charge, nor in any way obstruct or interfere with such person in the discharge of his duties, and any person failing to comply with this regulation shall be reported by the person in charge to the manager or under-manager.

24. Every person having charge of a horse, pony, mule or donkey shall drive it carefully and shall observe any directions that may be given to him by the horse-keeper or by the official under whose direction he works.

25. (a) No person below ground shall ride upon any animal nor, except by permission of the manager or under-manager, upon any tram, tub or other contrivance drawn by a horse or other animal.

(b) No person shall ride on any haulage rope.

26. No person when taking a tub by hand down an incline of which the gradient exceeds 1 in 12 shall go in front of the tub ; and in every case where the conditions are such that a person cannot control the tub by hand from behind, he shall not take the tub down unless some contrivance is provided to enable him to control the tub.

27. No person shall be in or about the mine in a state of intoxication, or, without permission of the manager, take or bring any intoxicating liquor on or in the mine, and no person shall throw any stone or other missile, or fight or behave in a violent manner, in or about the mine.

28. No person employed in or about the mine shall negligently or wilfully do anything likely to endanger life or limb in the mine, or negligently or wilfully omit to do anything necessary for the safety of the mine or of the persons employed therein.

29. Every workman receiving in or about the mine any personal injury caused by an explosion of gas or dust or any explosive or by electricity or overwinding or any other special cause specified by an order† under Section 80 (1) (iii) of the Act, or any personal injury causing him to absent himself from his work, shall as soon as possible report the same to one of the officials, and if required by the official shall forthwith proceed to the appointed place for first-aid treatment.

30. The manager shall appoint a competent person or persons to keep a correct record of the number of persons going below ground and returning from below ground daily, and if required by the manager

* Section 111 of the Act applies to any line or siding used in connection with a mine and not being part of a railway within the meaning of the Railway Employment (Prevention of Accidents) Act, 1900, *i.e.* not being part of a railway used for the purposes of public traffic.

† No order under Section 80(1) (iii) has at present been made.

every person shall immediately before going below ground and after returning from below ground record his presence in accordance with a system approved by the inspector of the division.

31. The manager shall cause to be posted up at the pit head where it may be conveniently seen by the persons employed a sketch plan of the mine showing the main roads, the means of egress from each part of the mine to the surface, and the telephone stations underground, and so often as the same becomes defaced, obliterated or destroyed shall cause it to be renewed with all reasonable despatch.

32. Where by the Act or regulations of the mine any duty is imposed upon or authority given to any deputy, that duty in cases of emergency may be fulfilled or that authority exercised by and at the discretion of any official his superior at the mine and duly qualified to perform such duties.

33. Every person before engaging any helper, drawer or other assistant shall acquaint the manager, under-manager (if any) or any other official of the mine superior to the deputies, and obtain his sanction.

34. Every official of the mine shall carry out the duties assigned to him by the manager, and shall carry out and enforce those provisions of the Act and of the regulations and orders made thereunder which relate to the matters in respect of which such duties have been so assigned.

The Manager.

35. The manager shall appoint in writing to be officials of the mine such number of competent persons as will be sufficient to secure a thorough supervision of all the operations in or about the mine and the enforcement of the requirements of the Act and of the regulations and orders made thereunder. He shall assign their duties to the several officials of the mine, and shall to the best of his power see that each official understands, and carries out and enforces those provisions of the Act and of the regulations and orders made thereunder which relate to the matters in respect of which duties are assigned to him.

36. He shall give attention to and cause to be carefully investigated, any representations or complaints that may be made to him as to any matter affecting the safety or health of persons in or about the mine.

37. He shall appoint the stations required by Section 63 and the lamp stations, if any, in pursuance of Section 34(1) (iii) of the Act, and cause their positions to be indicated by notices constructed of durable material.

38. He shall see that a sufficient supply of proper materials and appliances for the purpose of carrying out the provisions of the Act and ensuring the safety of the mine and persons employed therein is always provided, and, if he be not the owner or agent of the mine,

he shall report in writing to the owner or agent when anything is required for the aforesaid purpose that is not within the scope of his authority to order.

39. He shall determine and state in a notice which shall be kept posted up at the pit head the number of persons to be allowed to ride in a cage at one time, or, where a cage has more than one deck, on each deck of the cage. When men are being raised from the pit bottom, if more than one deck is used, the top deck shall be loaded with men first, but this shall not apply when the decks are simultaneously loaded or when a balanced platform is used for loading the cages.

40. If no under-manager has been appointed for the mine, the manager shall carry out the duties imposed by these regulations on the under-manager.

The Under-Manager.

41. It shall be the duty of the under-manager, as well as of the manager, to enforce to the best of his power the provisions of the Act and of the regulations and orders made thereunder, and he shall give (subject to the control of the manager) such directions as may be necessary to ensure compliance with those provisions and to secure the safety of the mine and the safety and health and proper discipline of the persons employed therein.

42. He shall give attention to and cause to be carefully investigated, any representations or complaints that may be made to him as to any matter affecting the safety or health of persons in or about the mine.

43. He shall, unless an official between himself and the deputies has been appointed, make arrangements for their meeting him daily for the purpose of conferring on matters connected with their duties; and shall also make arrangements to meet the other underground officials daily for the like purpose.

44. He shall to the best of his power see that all necessary materials and appliances are sent into the districts as required, and he shall report at once to the manager any deficiency in the supply of such materials and appliances.

45. He shall from time to time carefully examine all travelable parts of the mine, whether frequented by workmen or not.

Officials between the Manager and Under-Manager and the Deputies.

46-62. (*Revoked. See new provisions in the Coal Mines (Officials and Inspections) General Regulations, 1951, page 134.*)

Winding Engineman.

For the purpose of the following regulations, cage includes kibble.

63. Every winding engineman (unless some other competent person is specially appointed for the purpose by the manager) shall, at the commencement of or during his shift, carefully examine the external parts of his engine, the drum, the ropes upon the drum, the brakes, the signal bell and the indicator showing the position of the cage in the shaft, and the automatic contrivance, if any, for preventing over-winding. If any defect likely to affect the proper working of the engine is discovered then or at any other time, he shall not commence or continue winding until the matter has been reported to the manager, or under-manager, or to the official under whose direction he works, and he shall not resume winding until instructed to do so by the manager, under-manager or official as aforesaid.

64. Unless some other person is specially appointed for the purpose, he shall during his shift keep the engine and apparatus connected therewith under his charge properly cleaned and oiled.

65. He shall on no pretext leave the handles whilst the engine is in motion, or when anyone is in the cage.

66. Should a signal be given indistinctly, or should he have any doubt about a signal, he shall on no account set his engine in motion until a fully understood signal is received.

67. Before raising or lowering any person after any cessation of winding exceeding two hours, he shall run the cage or cages at least once between the shaft top and the lowest drawing level in order to ascertain whether everything is in order, and if any defect is discovered likely to affect the proper working of the winding apparatus, he shall not commence winding until the matter has been reported to the manager or under-manager, or to the official under whose direction he works, and he is instructed to do so by the manager, under-manager or official as aforesaid.

68. He shall not allow any unauthorised person to be in the engine house, nor shall he, without the written permission of the manager or of the official under whose direction he works, allow anyone to work the engine. He shall in no circumstances permit anyone, except with the authority in writing of the manager, to work the engine while persons are being raised or lowered in the shaft.

Persons in Charge of Ventilating Machines.

The following regulations shall not apply to any auxiliary fan placed underground, which does not contribute to the general ventilation of the mine or of any ventilating district of the mine.

69. The owner, agent or manager shall cause to be provided in connection with every ventilating fan driven by mechanical power a water gauge and either an automatic indicator registering the number of revolutions of the fan or an automatic indicator registering the water gauge.

70. The person in charge of any ventilating machinery driven by mechanical power shall keep the machinery running at the speed ordered by the manager or under-manager, and shall examine the machinery and observe the indicators at intervals which in the case of mines in which safety lamps are required by the Act or the regulations of the mine to be used shall be of not more than half an hour or such longer time as may be approved by the inspector of the division and in the case of other mines shall be of not more than two hours.

71. He shall immediately report to the official under whose direction he works any damage to, or defect or derangement in, the machinery.

72. He shall from time to time observe the ventilating pressure as indicated by the water gauge, and where an automatic indicator registering the water gauge is not in use, he shall at the end of each period of two hours enter in a book to be provided by the manager the number of revolutions of the fan and the pressure shown by the water gauge at the end of the period.

73. In the event of a stoppage of the machinery or of any unusual variation of the water gauge he shall at once inform the official under whose direction he works.

The Boiler Minder.

74. The person appointed to attend to any boiler shall from time to time throughout the day examine the boiler, feed-apparatus, safety valves, and other fittings, and dampers, and see that they are in good working order; and shall at once report to the official under whose direction he works any defect or derangement in the same.

75. He shall not, except with the authority of the official under whose direction he works, alter or permit anyone to alter the weight on any safety valve, and only weights made for the purpose shall be used on any safety valve.

76. He shall maintain the water in each boiler as nearly as practicable at the proper working level, but if it becomes too low, he shall at once lower the dampers, and damp down the fire, and, if necessary, draw the same, and report the circumstances to the official under whose direction he works. He shall also see that the pressure of steam fixed by the manager is on no account exceeded.

PART II.

MISCELLANEOUS PROVISIONS.

Air Measurements. [Section 29, subsection (2).]

77. (Revoked. See new provisions in No. 6 of the Coal Mines (Ventilation) General Regulations, 1947, page 177.)

Use of Electric Lamps other than locked Safety Lamps [Section 32].

78. (Revoked by the Coal Mines General Regulations (Lighting), 1934.)

Character of Winding Apparatus, etc. [Section 40(1).]

79. In every mine which is not a small mine* the apparatus for raising and lowering persons to or from the surface, hereinafter called the winding apparatus, in any shaft which is more than 150 feet in depth, shall be worked by mechanical power.

80. Winding apparatus worked by mechanical power—

(a) shall be so designed, constructed and maintained that, with the power provided, the raising and lowering of persons can be carried out with ease, regularity and safety ;

(b) if installed after 15 September, 1913, shall have the drum shafts, if ten inches or more in diameter, bored longitudinally at the centre ;

(c) shall be firmly connected to a rigid foundation so as to prevent any material movement of the apparatus as a whole.

81. Where winding apparatus is worked by other than mechanical power it shall be efficiently constructed and maintained and provided with a locking device or brake sufficient in itself to hold the load in the shaft at any point.

82-88. (Revoked. See new provisions in the Coal Mines General Regulations (Winding and Haulage), 1937, page 182.)

Exemptions from the Provision requiring Two Main Intake Airways. [Section 42(1).]

89. The provision in Section 42, subsection (1), of the Act requiring two main intake airways, shall not apply—

(a) to any seam the coal of which is so liable to spontaneous combustion that the provision of a second main intake airway in such seam would increase the risk of fire ;

(b) to any seam where, owing to the character of the strata or the nature of the pressure, the cost of making or maintaining

* “ ‘ Small mine ’ means a mine in which the total number of persons employed below ground does not exceed 30 ” (Coal Mines Act, 1911, Section 122).

two main intake airways in that seam might be so great as to prevent the seam being worked at a profit ;

(c) to any part of a seam where the mineral field leased or owned is not of sufficient width to allow the distances required by the regulations of the mine to be maintained between the roads in such part ;

(d) to mines of stratified ironstone in the Cleveland district, to mines of oil shale, or to mines in any other district as respects which the Minister is satisfied that similar conditions prevail ;

(e) to any mine in which the number of persons employed below ground does not at any one time exceed 100 ;

(f) to any seam which is naturally wet throughout.

If any question arises as to whether any of the foregoing exemptions applies to a mine or seam, that question shall be determined in the manner provided by the Act for settling disputes.*

90. The distance from the downcast shaft within which the two main intake airways shall not be required to be provided shall be the distance between the shaft and the edge of the shaft pillars. In the case of an inclined shaft or level entrance not driven in the coal seam the distance shall be the distance between the point where the shaft or entrance strikes the seam and the edge of the pillar left to support the shaft or entrance. In the case of an inclined shaft or level entrance driven in the coal seam, the distance shall be 200 yards from the mouth of the shaft or entrance.

Construction of Stoppings. [Section 42(3).]

91. (a) All stoppings between main intake and main return airways shall either—

(i) be constructed of tight stone, dirt, sand or rubbish packing at least five yards thick ; or

(ii) be constructed of tight stone, dirt, sand or rubbish packing at least three yards thick, and have the end of the packing nearest the intake airway faced with a wall of masonry, brickwork or concrete not less than nine inches thick, the face of which shall be covered with a coating of mortar so as to prevent leakage of air.

(b) The space between the face of the stopping and the roadway shall be kept clear.

(c) This regulation shall apply only to mines in which coal is worked, and shall not apply to any mine in South Staffordshire which is liable to spontaneous combustion in the unworked coal.

* Coal Mines Act, 1911, Section 116.

Winding.

***92.** The following signals shall be used at all times in connection with winding in shafts—

(a) For winding persons—

| | | |
|-----|---|---|
| (1) | When a person is about to descend, the banksman shall signal to the onsetter and to the winding engineman | 3 |
| | Before the person enters the cage the onsetter shall signal to the banksman and to the winding engineman | 3 |
| | When the cage at the bottom is clear and ready to ascend, the onsetter shall signal to the banksman and winding engineman | 1 |
| | When the person is in the cage and ready to descend, the banksman shall signal to the winding engineman | 2 |
| (2) | When a person is about to ascend, the onsetter shall signal to the banksman and to the winding engineman | 3 |
| | Before the person enters the cage the banksman shall signal to the onsetter | 3 |
| | When the person is in the cage and ready to ascend, the onsetter shall signal to the banksman and to the winding engineman | 1 |
| | When the banksman has received the signal " 1 " from the onsetter, he shall signal to the winding engineman | 2 |

(b) For winding otherwise than with persons—

| | |
|-------------------------------|---|
| To raise up | 1 |
| To stop when in motion | 1 |
| To lower down | 2 |
| To raise steadily | 4 |
| To lower steadily | 5 |

93. The manager shall, in the case of a mine where there are entrances into the workings from the shaft at different levels, prescribe the signals to be used to indicate the level to which the cage is to be sent, and in respect of movements of the cage between one level and another level, and shall fix any other signals that may be required.

94. A notice shall be posted in the engine house, and at the pit head, and at each entrance into the workings from the shaft, containing the foregoing signals and the signals fixed by the manager in pursuance of the preceding regulation.

95. In connection with every winding engine there shall be provided an appliance which shall automatically indicate in a visible manner to the winding engineman (in addition to the ordinary signal) the nature of the signal until the signal is complied with.

96. No person other than the banksman or onsetter shall give any signal unless he is an official of the mine or is authorised in writing by the manager to give signals.

97. *Temporary provision now lapsed.*

* Paragraphs (a) (1) and (2) of this regulation are as amended by No. 30 of the General Regulations of 1920, No. 1423.

Hauling.

98. The following signals shall be used in all mines in connection with underground haulage worked by gravity or mechanical power—

(a) Direct or main rope haulage :

| | | | | | | | | | |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|---|
| To stop | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| To lower | ... | ... | ... | ... | ... | ... | ... | ... | 2 |
| To wind up | ... | ... | ... | ... | ... | ... | ... | ... | 3 |

(b) Haulage (other than endless rope or chain haulage) on self-acting inclines—

| | | | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|-----|-----|---|
| To stop | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| To lower | ... | ... | ... | ... | ... | ... | ... | ... | 2 |
| When persons are about to travel up or down the incline | ... | ... | ... | ... | ... | ... | ... | ... | 4 |
| This signal shall be acknowledged by signalling | ... | ... | ... | ... | ... | ... | ... | ... | 4 |

(c) Main-and-tail rope haulage—

| | | | | | | | | | |
|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|---|
| To stop | ... | ... | ... | ... | ... | ... | ... | ... | 1 |
| To haul inbye | ... | ... | ... | ... | ... | ... | ... | ... | 2 |
| To haul outbye | ... | ... | ... | ... | ... | ... | ... | ... | 3 |
| To slack out tail-rope | ... | ... | ... | ... | ... | ... | ... | ... | 4 |
| To tighten tail-rope | ... | ... | ... | ... | ... | ... | ... | ... | 5 |
| To slack out main-rope | ... | ... | ... | ... | ... | ... | ... | ... | 6 |
| To tighten main-rope | ... | ... | ... | ... | ... | ... | ... | ... | 7 |

(d) Endless-rope (or endless-chain) haulage—

| | | | | | | | | | |
|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|---|
| To commence hauling | ... | ... | ... | ... | ... | ... | ... | ... | 2 |
| To stop hauling | ... | ... | ... | ... | ... | ... | ... | ... | 1 |

99. When persons are about to be conveyed inbye or outbye, each of the signals required by the foregoing regulations to be given when a set or train of tubs is about to be hauled inbye or outbye, as the case may be, shall be preceded by a cautionary signal of 8

100. The manager shall, in the case of a mine where there are several districts, prescribe the additional signals to be used to indicate the districts ; and shall fix any other signals that may be required.

101. A notice shall be posted in the hauling engine house and at each signalling station, containing the system of haulage signals in use at such engine house or signalling station.

102. *Temporary provision now lapsed.*

Telephones. [Section 54.]

103. Where in any mine not being a small mine* the distance of the main haulage from the shaft exceeds 1,000 yards, efficient means of telephonic communication shall be provided and maintained between the end of the main haulage and the pit bottom and the surface.

* “ ‘ *Small mine* ’ means a mine in which the total number of persons employed below ground does not exceed 30 ” (Coal Mines Act, 1911, Section 122).

This regulation shall not apply to mines of stratified ironstone in the Cleveland district, or to mines in any other district as respects which the Minister is satisfied that similar conditions prevail.

Barometer and Hygrometer. [Section 71.]

104. Every person on whom responsible duties are imposed with respect to the ventilation underground, and who is required to make a daily report in a book to be kept at the mine for the purpose, shall, immediately before going into the mine and after coming out of the mine, read* the barometer required to be placed near the entrance to the mine. This regulation shall not apply to mines of stratified ironstone in the Cleveland district or to mines in any other district as respects which the Minister is satisfied that similar conditions prevail.

105. Each hygrometer placed below ground in pursuance of the Act shall be read* by a responsible official of the mine once every week-day if in the main intake airway and once every week if in the main return airway. This regulation shall apply only to mines in which coal is worked.

Sanitary Conveniences. [Section 76.]

106. A sufficient supply of suitable sanitary conveniences shall be provided—

(a) on the surface, in or adjacent to the winding engine house, and at other suitable places convenient for the persons employed. Where females are employed on the surface, separate conveniences shall be provided for their use ;

(b) below ground, at or near the pit bottom, and at suitable positions along the main roads. This provision shall not apply to a shaft in the course of being sunk.

107. Every sanitary convenience below ground shall have a portable receptacle constructed of metal, and provided with a metal cover.

108. A sufficient supply of disinfectant, or dry coal dust, or other suitable material for covering the faeces shall be constantly provided in a suitable receptacle at every convenience below ground and at conveniences (other than water-closets) on the surface.

109. (a) Every sanitary convenience on the surface shall be under cover and so partitioned off as to secure privacy, and, if for the use of females, shall have a proper door and inside fastening.

(b) Where females are employed the conveniences for each sex shall be so placed or so screened that the interior shall not be visible, even when the door of any convenience is open, from any place where persons of the other sex have to work or pass, and if the conveniences

* The readings are required by Section 71 to be entered in a book kept at the mine. The prescribed form of book for barometer readings is M. & Q. Form No. 53A, and for hygrometer readings No. 53B.

for one sex adjoin those for the other sex the approaches shall be separate.

110. Every sanitary convenience shall be kept in a cleanly and sanitary condition, and in good repair, and the receptacles of all conveniences below ground shall be emptied and cleaned not less frequently than once in every seven days and oftener if necessary. The receptacles shall be emptied at the surface unless satisfactory arrangements are made for disposing of the contents in the gob, goaf or waste or for their destruction in a furnace.

111. No person shall relieve his bowels on the surface or on any roadway below ground, except in one of the conveniences provided in accordance with the foregoing regulations.

112. No person shall soil or render unfit for use in any way any convenience or sanitary utensil or appliance provided in accordance with the regulations, and every person relieving himself below ground shall cover the faeces with disinfectant, or dry coal dust or other suitable material.

Storage and Use of Candles and Paraffin Wax.

113. Candles and paraffin wax shall not be stored in the mine below ground, except in pursuance of a written exemption by the inspector of the division, which exemption may be at any time withdrawn.

Where candles are taken below ground in proper metal boxes, each of which contains not more than one pound weight of candles, and not more than one box for each man is taken below ground, the keeping of such boxes in the working places or at a district station during a working shift shall not be deemed to be storage within the meaning of this regulation.

114. Where candles are stored in the mine below ground in pursuance of an exemption as aforesaid, the following conditions shall be observed—

(a) the quantity stored on any day shall not exceed the supply reasonably required for that day ;

(b) until required for use, they shall be kept in a box or boxes constructed of fireproof material and placed in a recess in the strata, which recess, if made in the coal, shall be lined with fireproof material. Each box shall be in the sole charge of a person specially appointed for the purpose in writing by the manager, and shall be kept securely locked. No person other than a person so appointed shall in any way interfere with any such box.

115. All candles used in the mine below ground shall be placed in a metal holder, which shall be of such design that when fixed to a prop the flame of the candle cannot set fire to the wood.

This regulation shall not apply to candles—

- (1) when being carried ;
- (2) when used under the direct supervision of the person using the same.

116. Candles looped or strung together shall in no circumstances be burned off below ground.

PART III.

ELECTRICITY [SECTION 60].*

NOTE.—The original code of Electricity Regulations applied to apparatus below ground and to apparatus above ground which directly affected the safety of persons below ground, but *not* to other apparatus above ground. By No. 28 of the General Regulations dated 30 July, 1920, however, the code was applied with certain modifications to *all* apparatus above ground. Provisions which apply both below and above ground are printed in ordinary (Roman) type ; provisions which apply only below ground are printed in heavy (**Clarendon**) type ; and provisions which apply only above ground are printed in *italics*. The differences in type are introduced solely for the purpose of making these distinctions, and must not be regarded as implying any difference in the relative importance of the various requirements.

117. It shall be the duty of the mine owner, agent and manager to comply with and enforce the following regulations, and it shall be the duty of all workmen and persons employed to conduct their work in accordance with the regulations.

118. “Pressure” means the difference of electrical potential between any two conductors, or between a conductor and earth as read by a hot wire or electro-static volt-meter.

“Low Pressure” means a pressure in a system normally not exceeding 250 volts where the electrical energy is used.

“Medium Pressure” means a pressure in a system normally above 250 volts, but not exceeding 650 volts, where the electrical energy is used.

“High Pressure” means a pressure in a system normally above 650 volts, but not exceeding 3,000 volts, where the electrical energy is used or supplied.

“Extra-high Pressure” means a pressure in a system normally exceeding 3,000 volts, where the electrical energy is used or supplied.

“System” means an electrical system in which all the conductors and apparatus are electrically connected to a common source of electro-motive force.

“Concentric System” means a system in which the circuit in a conductor or conductors, called the inner conductor, is completed through one or more conductors, called the outer conductor, arranged so that the inner conductor is insulated and the outer conductor is

* An explanatory memorandum on the Electricity Regulations has been issued (M. & Q. Form No. 11).

disposed over the insulation of, and more or less completely around, the inner conductor.

“ Conductor ” means an electrical conductor arranged to be electrically connected to a system.

“ Apparatus ” means an electrical apparatus, and includes all apparatus, machines and fittings in which conductors are used, or of which they form a part.

“ Circuit ” means an electrical circuit forming a system or branch of a system.

“ Covered with insulating material ” means adequately covered with insulating material of such quality and thickness that there is no danger.

“ Metallic covering ” means iron or steel armouring, with or without a lead or other metallic sheath as the conditions of the case may require, or an iron or steel pipe surrounding two or more conductors.

“ Bare ” means not covered with insulating material.

“ Live ” means electrically charged.

“ Dead ” means at, or about, zero potential, and disconnected from any live system.

“ Open Sparking ” means sparking which owing to the lack of adequate provision for preventing the ignition of inflammable gas external to apparatus would ignite such inflammable gas.

“ Earthed ” means connected to the general mass of earth in such manner as will ensure at all times an immediate discharge of electrical energy without danger.

“ Earthing system ” means an electrical system in which all the conductors are earthed.

“ Switchgear ” means switches or fuses, conductors and other apparatus in connection therewith, used for the purpose of controlling the current or pressure in any system or part of a system.

“ Authorised person ” means a person appointed in writing by the manager of the mine to carry out certain duties incidental to the generation, transformation, distribution, or use of electrical energy *in (at the surface of)* the mine, such person being a person who is competent for the purposes of the rule in which the term is used.

“ Electrician ” means a person appointed in writing by the manager of the mine to supervise the apparatus *in (at the surface of)* the mine and the working thereof, such person being a person who is over 21 years of age, and is competent for the purposes of the rule in which the term is used.

“ Danger ” means danger to health or danger to life or limb from shock, burn or other injury to persons employed, or from fire or explosion attendant upon the generation, transformation, distribution, or use of electrical energy.

“ Use ” of electricity means the conversion of electricity into mechanical energy, heat or light for the purpose of providing mechanical energy, heat or light.

119. Notices shall be sent to the inspector of the division, on the forms prescribed by the Minister, as follows, namely—

(i) *notice of the intention to introduce apparatus into any mine, or into any ventilating district in any mine ;

(ii) *notice of the intention to introduce or re-introduce electricity into any mine where the use of electricity has previously been prohibited by Section 60(1) of the Act ;

(iii) †on or before the twenty-first day of January in every year, an annual return giving the size and type of apparatus and any particulars which may be required by the Minister as to the circumstances of its use.

If the inspector of the division does not object in writing, within one calendar month from the receipt by him of the notice, to the carrying out of either of the intentions specified in the first or second notices, the owner shall be entitled to carry out such intention or intentions:

Provided that this regulation shall not apply to telephones and signalling apparatus.

120. A proper plan on the same scale as that kept at the mine in fulfilment of the requirements of the Act, shall be kept in the office at the mine showing the position of all fixed apparatus in the mine, other than cables, telephones and signalling apparatus. The said plan shall be corrected as often as may be necessary to keep it reasonably up to date, and it shall be produced to an inspector of mines at any time on his request.

121. The following notices, constructed of durable material, shall be exhibited where necessary—

(i) a notice prohibiting any person other than an authorised person from handling or interfering with apparatus ;

(ii) a notice containing directions as to procedure in case of fire. This notice shall be exhibited in every place containing apparatus, other than cables, telephones and signalling apparatus ;

(iii) a notice containing directions as to the restoration of persons suffering from the effects of electric shock ;

(iv) a notice containing instructions how to communicate with the person appointed under Regulation 128 (a). This notice shall be exhibited at the shaft bottom.

122. (a) In all places lighted by electricity where a failure of the electric light would be likely to cause danger, one or more safety lamps or other proper lights shall be kept continuously burning.

* The prescribed form of notice is M. & Q. Form No. 12.

† The prescribed form of return is sent each year to the owner from the Ministry of Fuel and Power.

Words in ordinary (Roman) type apply both below and above ground. Words in heavy (Clarendon) type apply only below ground. Words in *italics* apply only above ground.

(b) **Efficient telephonic or other equivalent means of communication shall be provided for communicating between the place in which the switchgear provided under Regulation 128 (a) is erected and the shaft bottom or main distributing centre in the pit.**

(c) Fire buckets of suitable capacity, filled with clean dry sand ready for immediate use in extinguishing fires, shall be kept in every place containing apparatus, other than cables, telephones and signalling apparatus.

123. (a) Where necessary to prevent danger or mechanical damage transformers and switchgear (*apparatus*) shall be placed in a separate room, compartment, or box of fireproof construction. *Inflammable or explosive material shall not be stored in any such room, compartment or box.*

(b) **Unless the apparatus is so constructed, protected, and worked as to obviate the risk of fire, no inflammable material shall be used in the construction of any room, compartment, or box containing apparatus or in the construction of any of the fittings therein. Each such room, compartment or box shall be substantially constructed and shall be kept dry.**

(c) Adequate working space and means of access clear of obstruction and free from danger shall be provided for all apparatus that has to be worked or attended to by any person, and all handles intended to be operated shall be conveniently placed for that purpose.

124. (a) All apparatus and conductors shall be sufficient in size and power for the work they may be called upon to do, and so constructed, installed, protected, worked and maintained as to prevent danger so far as is reasonably practicable.

(b) All insulating material shall be chosen with special regard to the circumstances of its proposed use. It shall be of mechanical strength sufficient for its purpose, and, so far as is practicable, it shall be of such a character or so protected as fully to maintain its insulating properties under working conditions of temperature and moisture.

(c) Every part of a system shall be kept efficiently insulated from earth, except that (i) the neutral point of a polyphase system may be earthed at one point only ; (ii) the mid-voltage point of any system, other than a concentric system, may be earthed at one point only ; and (iii) the outer conductor of a concentric system shall be earthed. Where any point of a system is earthed it shall be earthed by connection to an earthing system at the surface of the mine.

(d) Efficient means shall be provided for indicating any defect in the insulation of a system.

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125. (a) All metallic sheaths, coverings, handles, joint boxes, switchgear frames, instrument covers, switch and fuse covers and boxes, and all lampholders, unless efficiently protected by an earthed or insulating covering made of fire-resisting material, and the frames and bedplates of generators, transformers and motors (including portable motors), shall be earthed by connection to an earthing system at the surface of the mine.

(b) Where the cables are provided with a metallic covering constructed and installed in accordance with Regulation 129 (e), such metallic covering may be used as a means of connection to the earthing system. All the conductors of an earthing system shall have a conductivity at all parts and at all joints at least equal to 50 per cent. of that of the largest conductor used solely to supply the apparatus, a part of which it is desired to earth. Provided that no conductor of an earthing system shall have a cross-sectional area of less than .022 of a square inch.*

Except that in the case of a portable lamp or other portable apparatus of small current capacity, connected to the system by means of a flexible cable complying with Regulation 130, the cross-sectional area of the earthing conductor in the flexible cable shall not be required to be greater than the cross-sectional area of either of the live conductors in the same flexible cable.

(c) All joints in earth conductors and all joints to the metallic covering of the cables shall be properly soldered or otherwise efficiently made, and every earth conductor shall be soldered into a lug for each of its terminal connections. No switch, fuse, or circuit breaker shall be placed in any earth conductor.

This rule shall not apply (except in the case of portable apparatus) to any system in which the pressure does not exceed low pressure direct current or 125 volts alternating current.

126. (a) Where electricity is distributed at a pressure higher than medium pressure (i) it shall not be used without transformation to medium or low pressure except in fixed machines in which the high or extra-high pressure parts are stationary; and (ii) motors under 20 horse-power shall be supplied with current through a transformer stepping down to medium or low pressure.

(b) Where energy is transformed, suitable provision shall be made to guard against danger by reason of the lower-pressure apparatus becoming accidentally charged above its normal pressure by leakage from or contact with the higher-pressure apparatus.

* Temporary exemption has been given as to the minimum size of .022 square inch in favour of flexible cables of Type 30 in B.S. 708—1940 (5-core 0.01 square inch drilling machine flexible cable) provided that (a) the circuit is 3-phase at 125 volts (max.) with the neutral point earthed; and (b) remote control is used at not more than 30 volts and so arranged that any interruption in the pilot or earth conductor circuit shall automatically isolate the cable (S.R. & O. 1940, No. 293).

127. Switchgear and all terminals, cable ends, cable-joints and connections of apparatus shall be constructed and installed so that—

(i) all parts shall be of mechanical strength sufficient to resist rough usage;

(ii) all conductors and contact areas shall be of ample current-carrying capacity, and all joints in conductors shall be properly soldered or otherwise efficiently made;

(iii) the lodgment of any matter likely to diminish the insulation, and of coal dust on or close to live parts shall be prevented;

(iv) all live parts shall be so protected or enclosed as to prevent accidental contact by persons and danger from arcs or short circuits, fire or water;

(v) where there may be risk of igniting gas, coal dust, or other inflammable material, all parts shall be so protected as to prevent open sparking.*

128. (a) **Properly constructed switchgear for cutting off the supply of current to the mine shall be provided at the surface of the mine, and during the time any cable is live a person authorised to operate the said switchgear shall be available within easy reach thereof.**

Lightning arresters, properly adjusted and maintained, shall be provided where necessary to prevent danger.

(b) Efficient means, suitably placed, shall be provided for cutting off all pressure from every part of a system, as may be necessary to prevent danger.

†(c) Such efficient means shall be provided in respect of each separate circuit for cutting off all pressure automatically from the circuit or part or parts of the circuit affected in the event of a fault as may be necessary to prevent danger.

(d) Every motor shall be controlled by switchgear for starting and stopping, so arranged as to cut off all pressure from the motor and from all apparatus in connection therewith, and so placed as to be easily worked by the person appointed to work the motor.

(e) If a concentric system is used, no switch, fuse or circuit breaker shall be placed in the outer conductor, or in any conductor connected thereto, except that, if required, a reversing switch may be inserted in the outer conductor at the place where the current is being used. Nevertheless, switches, fuses, or circuit breakers may be used to break the connection with the generators or transformers supplying the electricity; provided that the connection of the outer conductor with the earthing system shall not thereby be broken.

* See note to Regulation 132 (i) and (ii).

† As amended by No. 33 of the General Regulations, 1920, No. 1423.

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129. *Unless so placed or otherwise safeguarded as to prevent danger,* all cables, other than flexible cables for portable apparatus and **signalling wires** (*signal and telephone wires*), shall comply with the following requirements—

(a) They shall be covered with insulating material (except that the outer conductor of a concentric system may be bare). The lead sheath of lead-sheathed cables and the iron or steel armouring of armoured cables shall be of not less thickness respectively than is recommended by the British Standards Institution.*

(b) They shall be efficiently protected from mechanical damage and supported at sufficiently frequent intervals and in such a manner as adequately to prevent danger and damage to the cables.

(c) Concentric cables, or two-core or multi-core cables protected by a metallic covering, or single-core cables protected by a metallic covering which shall contain all the conductors of the circuit, shall be used (i) where the pressure exceeds low pressure; (ii) **where the roadway conveying the cables is also used for mechanical haulage**; and (iii) where there may be risk of igniting **gas**, coal dust, or other inflammable material;

Provided that if the medium pressure direct-current system is used (i) two single-core cables protected by metallic coverings may be used for any circuit **if the said metallic coverings are bonded together by earth conductors so placed that the distance between any two consecutive bonds is not greater than 100 feet measured along either cable**, and (ii) two single-core cables covered with insulating material efficiently protected otherwise than by a metallic covering may be used in gate roads (except in gate roads which are also used for mechanical haulage, or where there may be risk of igniting gas, coal dust, or other inflammable material) for the purpose of supplying portable apparatus.

(d) Cables unprotected by a metallic covering shall be properly secured **by some non-conducting and readily breakable material** to efficient insulators.

(e) The metallic covering of every cable shall be (i) electrically continuous throughout; (ii) earthed, if it is required by Regulation 125 (a) to be earthed, by a connection to the earthing system of not less conductivity than the same length of the said metallic covering; (iii) efficiently protected against corrosion where necessary; (iv) of a conductivity at all parts and at all joints at least equal to 50 per cent. of the conductivity of the largest conductor enclosed by the said metallic covering; and (v) where there may be risk of igniting **gas**, coal dust, or other inflammable material, so

* See B.S. Specification No. 7.

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constructed as to prevent as far as is practicable any fault or leakage of current from the live conductors from causing open sparking;

Provided that where two single-core cables protected by metallic coverings bonded together in accordance with paragraph (c) of this regulation are used for a circuit, the conductivity of each of the said metallic coverings at all parts and at all joints shall be at least equal to 25 per cent. of the conductivity of the conductor enclosed thereby.

(f) Cables and conductors, where joined up to motors, transformers, switchgear and other apparatus, shall be installed so that (i) they are mechanically protected by securely attaching the metallic covering (if any) to the apparatus; and (ii) the insulating material at each cable end is efficiently sealed so as to prevent the diminution of its insulating properties. Where necessary to prevent abrasion **or to secure gas-tightness**, there shall be properly constructed bushes.

130. (a) Flexible cables for portable apparatus shall be two-core or multi-core and covered with insulating material which shall be efficiently protected from mechanical damage. If a flexible metallic covering be used either as the outer conductor of a concentric system or as a means of protection from mechanical damage, the same shall not alone be used to form an earth conductor for the portable apparatus.*

(b) Every flexible cable for portable apparatus shall be connected to the system and to the portable apparatus itself by a properly constructed connector.

(c) At every point where flexible cables *for portable apparatus* are joined to main cables a switch capable of entirely cutting off the pressure from the flexible cables shall be provided.

(d) No lampholder shall be in metallic connection with the guard or other metal work of a portable lamp.

131. (a) Every person appointed to work, supervise, examine or adjust any apparatus shall be competent for the work that he is set to do. No person except an electrician or a competent person acting under his supervision shall undertake any work where technical knowledge or experience is required in order adequately to avoid danger.

(b) An electrician shall be appointed in writing by the manager to supervise the apparatus. If necessary for the proper fulfilment of the duties detailed in the succeeding paragraphs of this rule, the

* Temporary exemption has been given as to the use of a flexible metallic covering as an earth conductor in favour of pliable armoured cable of Type 21 in B.S. 708—1940 (4-core 0.0145 or 0.03 square inch) provided that (a) the circuit is 3-phase at 650 volts (max.) with the neutral point earthed; and (b) electrical interlock is used at not more than 30 volts and so arranged that any interruption in the pilot or earth conductor circuit shall automatically isolate the cable (S. R. & O., 1940, No. 293).

Words in ordinary (Roman) type apply both below and above ground. Words in heavy (**Clarendon**) type apply only below ground. Words in *italics* apply only above ground.

manager shall also appoint in writing an assistant or assistants to the electrician.

(c) The electrician shall be in daily attendance at the mine. He shall be responsible for the fulfilment of the following duties, which shall be carried out by him or by an assistant or assistants duly appointed under paragraph (b): (i) the thorough examination of all apparatus (including the testing of earth conductors and metallic coverings for continuity) as often as may be necessary to prevent danger; and (ii) the examination and testing of all new apparatus, and of all apparatus re-erected in a new position *in (at the surface of)* the mine before it is put into service in the new position:

Provided that in the absence of the electrician for more than one day the manager shall appoint in writing an efficient substitute.

(d) The electrician shall keep at the mine a log-book made up of daily log-sheets kept in the form prescribed by the Minister.* The said log-book shall be produced at any time to an inspector of mines on his request.

(e) Should there be a fault in any circuit the part affected shall be made dead without delay, and shall remain so until the fault has been remedied.

(f) All apparatus shall be kept clear of obstruction and free from dust, dirt and moisture, as may be necessary to prevent danger.

Inflammable or explosive material shall not be stored in any room, compartment or box containing apparatus, or in the vicinity of apparatus.

(g) Adequate precautions shall be taken by earthing or other suitable means to discharge electrically any conductor or apparatus, or any adjacent apparatus if there is danger therefrom, before it is handled and to prevent any conductor or apparatus from being accidentally or inadvertently electrically charged when persons are working thereon. While lamps are being changed the pressure shall be cut off:

Provided that this paragraph shall not apply to the cleaning of commutators and slip-rings working at low or medium pressures.

(h) The person authorised to work an electrically-driven **coal-cutter or other** portable machine shall not leave the machine while it is working, and shall, before leaving the **working place (machine)**, ensure that the pressure is cut off from the flexible trailing cable which supplies such **coal-cutter or other** portable machine. Trailing cables shall not be dragged along by the machine when working.

(i) Every flexible cable shall be examined periodically (if used with a portable machine, at least once in each shift by the person authorised to work the machine), and if found damaged or defective it shall forthwith be *repaired or* replaced by a spare cable in good and

* The prescribed form of log-book is M. & Q. Form No. 10.

Words in ordinary (Roman) type apply both below and above ground. Words in heavy (Clarendon) type apply only below ground. Words in *italics* apply only above ground.

substantial repair. Such damaged or defective cable shall not be further used underground until after it has been sent to the surface and there properly repaired.

132. In any part of a mine in which inflammable gas, although not normally present, is likely to occur in quantity sufficient to be indicative of danger, the following additional requirements shall be observed—

(i) all cables, apparatus, signalling wires and signalling instruments shall be constructed, installed, protected, worked and maintained, so that in the normal working thereof there shall be no risk of open sparking;*

(ii) all motors shall be constructed so that when any part is live all rubbing contacts (such as commutators and slip-rings) are so arranged or enclosed as to prevent open sparking;*

(iii) the pressure shall be switched off apparatus forthwith if open sparking occurs, and during the whole time that examination or adjustment disclosing parts liable to open sparking is being made. The pressure shall not be switched on again until the apparatus has been examined by the electrician or one of his duly appointed assistants and the defect (if any) has been remedied or the adjustment made.

(iv) (*Revoked by the Coal Mines General Regulations (Lighting), 1934.*)

(v) (*Revoked. See new provisions in Nos. 2 (e) and 5 (a) and (b) of the Coal Mines General Regulations (Firedamp Detectors), 1939, pages 103 and 104.*)

133. (a) Current from lighting or power circuits shall not be used for firing shots,

(b) Shot firing cables shall be covered and protected as provided by Regulation 130 (a) for flexible cables. Adequate precautions shall be taken to prevent them from touching other cables and apparatus.

* The Ministry tests of electrical apparatus as to its safety against the risk of open sparking are applied to—

(a) the flameproof enclosure of electrical apparatus of all descriptions designed for use on power circuits (*e.g.* motors, switchgear, lighting fittings, etc.) : (*see Testing Memorandum No. 4*) :

(b) the intrinsic safety of signalling and telephone apparatus—General Regulation 8 of 8 August, 1938 (page 163) : (*see also Testing Memorandum No. 10*) :

(c) the intrinsic safety of electrical shot firing apparatus—Coal Mines (Explosives) Order, 1951, Article 14 (2) (page 80) : (*see also Testing Memorandum No. 10*) :

Apparatus is said to be “intrinsically safe” when it is so designed that it cannot produce any spark that is capable of igniting firedamp, either at contacts in the instrument itself or on bare line wires by which the instruments may be connected in circuit.

Words in ordinary (Roman) type apply both below and above ground. Words in heavy (Clarendon) type apply only below ground. Words in *italics* apply only above ground.

134. (a) Where electricity is used for signalling the pressure in any one circuit shall not exceed 25 volts.

(b) Contact-makers used for signalling shall be so constructed as to prevent the accidental closing of the circuit.

(c) Adequate precautions shall be taken to prevent signal and telephone wires from touching cables and other apparatus.

135. (a) All relighting apparatus shall be so constructed, worked and maintained as to preclude the accumulation of explosive gas within it.

(b) Relighting apparatus shall not be used in any part of a mine to which Regulation 132 applies.

(c) (*Revoked and a new provision inserted in Section 34 by the Coal Mines General Regulations (Safety Lamps), 1927.*)

136. (*Revoked by the Coal Mines (Locomotives) General Regulations, 1949, but any consent given under paragraph 136 (b) is deemed to be given by the inspector of the division under Regulation 4 of those regulations.*)

137. (a) Any of the requirements of this part of these regulations shall not apply in any case in which exemption is obtained from the Minister on the ground either of emergency or special circumstances, on such conditions as the Minister may prescribe.

(b) (*Lapsed.*)

PART IV.

(*Revoked and superseded by Rescue Regulations, 1928, and First-Aid Regulations, 1930.*)

PART V.

SURFACE LINES AND SIDINGS.

The following regulations shall apply to lines of rails of not less than 4 ft. 8½ in. gauge and sidings, including lines or sidings to which Section 111 of the Act applies,* and the use of locomotives and wagons thereon—

150. Point rods and signal wires in such a position as to be a source of danger to persons employed shall be sufficiently covered or otherwise guarded.

151. Ground levers working points shall be so placed that men working them are clear of adjacent lines, and shall be placed in a

* Section 111 of the Act applies to any line or siding used in connection with a mine and not being part of a railway within the meaning of the Railway Employment (Prevention of Accidents) Act, 1900, *i.e.* not being part of a railway used for the purposes of public traffic.

Words in ordinary (Roman) type apply both below and above ground. Words in heavy (Clarendon) type apply only below ground. Words in *italics* apply only above ground.

position parallel to the adjacent lines, or in such other position and be of such form as to cause as little obstruction as possible to persons employed.

This rule shall only apply to sidings constructed after 10 June, 1911.

152. Lines of rails and points shall be periodically examined and kept in efficient order, having regard to the nature of the traffic.

153. Coupling poles or other suitable mechanical appliances shall be provided where required, and shall be used in every case for coupling and uncoupling locomotives or wagons in motion wherever it is reasonably practicable.

154. Pointed wood sprags, not exceeding three feet in length, and scotches when required shall be provided for the use of persons in charge of the movement of wagons, and shall be used as and when required.

155. No person, except those in charge of the wagons, shall pass immediately in front of or between wagons moving under the screens.

156. Where during the period between one hour after sunset and one hour before sunrise, or in foggy weather, shunting or any operations likely to cause danger to persons employed are frequently carried on, efficient lighting shall be provided either by hand lamps or stationary lights, as the case may require, at all points where necessary for the safety of such persons.

157. Where materials are placed within three feet of a line of rails and persons employed are exposed to risk of injury from traffic by having to pass on foot over them or between them and the line, such material shall, as far as reasonably practicable, be so placed as not to endanger such persons, and there shall be adequate recesses at intervals of not more than 20 yards where the materials exceed that length.

This rule shall not apply to stocking grounds.

158. No person shall cross a line of rails by crawling or passing underneath a train or wagons thereon where there may be risk of danger from traffic.

159. Wagons shall not be moved or allowed to be moved on a line of rails by means of a prop or pole when other reasonably practicable means may be adopted. Props used for the above purpose shall be made of iron, steel or strong timber hooped with iron to prevent splitting, and ropes or chains used for towing shall be of a suitable nature and sufficient strength.

160. Wherever railway wagons are specially placed so as to afford a thoroughfare, such thoroughfare shall be at least five yards in length.

161. Where a locomotive pushes more than one wagon and risk of injury may thereby be caused to persons employed, a man shall, wherever it is safe and reasonably practicable, accompany or precede the front wagon, or other efficient means shall be taken to obviate such risk.

162. (a) No person shall be upon the buffer of a locomotive or wagon in motion unless there is a secure handhold, and shall not stand thereon unless there is also a secure footplace; (b) no person shall ride on a locomotive or wagon by means of a coupling pole or other like appliance.

163. No locomotive or wagon shall be moved on a line of rails until warning has been given by the person in charge to persons employed whose safety is likely to be endangered.

164. Where persons employed have to pass on foot or work, no locomotive or wagon shall be moved on a line of rails during the period between one hour after sunset and one hour before sunrise, or in foggy weather, unless the approaching end, wherever it is safe and reasonably practicable, is distinguished by a suitable light or accompanied by a man with a lamp :

Provided that this regulation shall not apply to the movement of locomotives or wagons within any area which is efficiently lighted by stationary lights.

165. Any person who has been holding a pair of points must see that they drop back into their proper position before leaving them, and in case of throw-over point levers he must see that the lever is thrown back into its proper position before leaving it.

166. Where wagons are used on self-acting inclined planes efficient **stop-blocks shall be provided at the top of the inclines, and runaway switches shall be fixed in such positions as to prevent danger, and no wagon shall be left on a self-acting incline without being properly secured.**

167. The driver in charge of a locomotive or a man preceding it on foot shall give an efficient sound signal as a warning on approaching any level crossing over a line of rails regularly used by persons employed, or any curve where sight is intercepted, or any other point of danger to persons employed.

168. A danger signal shall be exhibited at or near the ends of any wagon or train of wagons undergoing repair wherever persons employed are liable to be endangered by an approaching locomotive or wagon.

169. No person under the age of 18 shall be employed as a locomotive driver, and no person under the age of 16 shall be employed as a shunter.

170. All glass tubes of water gauges on locomotives or stationary boilers used for the movement of wagons shall be adequately protected by a covering or guard.

171. No person shall move or attempt to move a wagon by pushing at the buffer.

PART VI.

ADDITIONAL REGULATIONS FOR SINKING.

For the purpose of the regulations, kibble includes kettle, hoppit, tub, bowk, barrel or cage.

172. In addition to the daily examination required by Section 66 of the Act, the master sinker, or a competent person appointed for the purpose by the manager, shall once at least in every 24 hours examine thoroughly the state of the shaft and the state of all gear by which cradles, platforms, or pumps are slung in the shaft or by which persons or materials are raised or lowered.

173. (a) The manager shall fix by a notice which shall be kept posted at the top of the shaft in a prominent position the number of persons who may ride in the kibble at one time, and the banksman or chargeman, as the case may be, shall not allow any person to ride in excess of that number.

(b) No person shall ride on or against a full kibble or on the edge of a kibble.

174. No engine worked by mechanical power other than a fixed engine shall be used for lowering and raising persons and material in the shaft.

175. Every cradle or platform used in the shaft shall be constructed with a grid or other suitable contrivance, when necessary to secure the efficient ventilation of the whole of the shaft.

176. Every cradle or platform on which men work in the shaft shall be so protected as to prevent anyone falling off.

177. While men are at work on any cradle or platform in the shaft the following precautions shall be strictly observed—

(a) The cradle or platform shall be secured to the sides of the shaft in order to prevent its swinging.

(b) The flap over the kibble hole shall be securely fastened.

(c) If the cradle or platform is constructed of two or more pieces hinged, the pieces shall be securely bolted together.

(d) The cradle or platform shall not be moved except by the express direction of the manager, master sinker or chargeman.

178. If work is carried on during the night the surface at the shaft top shall be efficiently lighted.

179. The competent person appointed under Section 14 of the Act shall during his shift have entire charge of the operations in the shaft bottom, subject, however, to the directions of the master sinker or of the manager of the mine, and is hereinafter referred to as the chargeman.

180. The examination required to be made by the chargeman before the commencement of work shall be made immediately before the descent of the shift.

181. The chargeman shall as part of his examination before the commencement of work, or if work is carried on without any interval by a succession of shifts, then as part of his examinations during his shift, examine carefully the sides of the shaft, take off any loose stones, and otherwise satisfy himself that the shaft is in a safe condition for men to work at the bottom. When men are engaged in walling or tubbing the shaft a similar examination shall be made by a competent person appointed by the manager.

182. The chargeman shall be the last man to ride at the end of the shift, and, if his shift is succeeded immediately by another shift, he shall not leave the bottom of the shaft until after the descent of the chargeman of the next shift.

183. When stone, coal or debris or gear, tools or materials are being sent to the surface the chargeman shall see—

- (a) that the kibble is properly loaded ;
- (b) that no stones, coal or debris are packed above the level of the top of the kibble ;
- (c) that gear, tools or materials are put into an empty kibble, and, if they project above the level of the top of the kibble, are securely fastened to the bow or chains of the kibble before the kibble is sent away ;
- (d) that the kibble before being sent away from the bottom is put into line with the pulleys and carefully steadied, and that the bottom and sides are free from adhering stones and dirt.

184. No person shall be allowed to descend after any cessation of work in the shaft caused by the withdrawal of the workmen for shot-firing or other purposes until the chargeman, accompanied if necessary by not more than two other persons, has descended and examined the shaft and found it to be safe in all respects. If inflammable gas has been found or is likely to be found in the shaft the examination shall be made with a locked safety lamp of a type which will indicate the presence of such gas.

185. The winding engineman shall not work the winding engine when men are in the shaft except in pursuance of a signal received from the banksman or chargeman.

186. When lowering the kibble the winding engineman shall stop it when it has reached a point three fathoms above the bottom of the shaft or above any cradle or platform upon which the kibble is to alight, and shall wait the signal from the chargeman to let it down. When raising the kibble he shall stop the engine as soon as the kibble has been raised four feet from the bottom, in order that the chargeman may see that the rope is steadied, and shall not again move his engine until he has received the signal from the banksman or chargeman.

187. When gear, tools or materials are being lowered the banksman shall see (a) that the kibble is properly loaded, (b) that no loose material

is packed above the level of the top of the kibble and (c) that gear or tools are put into an empty kibble, and if they project above the level of the top are securely fastened to the bow or chains of the kibble, and (d) that timber and other bulky articles are safely slung.

188. The banksman shall at all times keep the shaft top and landing edge free from loose material.

189. The following signals shall be used—

| | | | | | | | | |
|--|-----|-----|-----|-----|-----|-----|-----|---|
| To raise up | ... | ... | ... | ... | ... | ... | ... | 1 |
| To lower down | ... | ... | ... | ... | ... | ... | ... | 2 |
| To stop when in motion | ... | ... | ... | ... | ... | ... | ... | 1 |
| When men are to ride a preliminary signal of | ... | ... | | | | | | 3 |

The manager shall fix such other signals as may be required.

190. No person other than the banksman or chargeman shall give any signal unless he is an official of the mine or is authorised in writing by the manager to give signals.

B. GENERAL CODE OF REGULATIONS, 1920, No. 1423

PART I.

1-8.—(*Revoked by the Coal Mines General Regulations (Precautions against Coal Dust), 1939—page 69.*)

PART II.

PRECAUTIONS AGAINST SPONTANEOUS COMBUSTION.

9.—The following provisions shall apply to any mine or part of a mine in which safety lamps are required by Section 32 of the Act or by any order or regulations made under the Act to be used, and to any other mine where the Minister directs that they shall apply in view of the conditions existing in that mine. If any question arises as to the reasonableness of any such direction, it shall be determined in the manner provided by this Act for settling disputes—

(i) On the appearance in any part of the mine of smoke or other sign indicating that a fire has or may have broken out below ground, every workman other than those necessarily engaged in dealing with the emergency shall be withdrawn from the ventilating district or districts affected, and before any workman is readmitted into the district or districts affected, the manager or under-manager, accompanied by the deputy or deputies concerned and by two persons selected by the workmen employed in the mine, shall examine the district or districts and shall make a full and accurate report* of the condition of the district or districts, and no workman shall be readmitted unless the manager or under-manager and the representatives of the workmen, if any, making the examination report the mine to be safe. If there is a disagreement between the manager or under-manager and the representatives of the workmen as to whether the mine is safe for the readmission of the men the question shall be referred to the inspector of the division or the Senior Inspector of Mines,† whose decision shall be final. Every such report shall be signed by the persons making the examination and shall indicate if possible by means of a plan the situation of the fire. The report shall be kept at the office of the mine and a copy shall be posted up at the pit head the same day. The manager shall not be bound to delay the examination if after reasonable notice the representatives selected by the workmen are not readily available.

The reports‡ made by the responsible official appointed to supervise the affected area shall be posted up at the pit head at the end of each shift for the information of the workmen.

* The prescribed form of report of examinations made in pursuance of Regulations 9 (i), 9 (ii), 9 (iii) and 10 is M. & Q. Form No. 75.

† The prescribed form of report is M. & Q. Form No. 76.

‡ *i.e.*, the inspector in charge of the district.

(ii) When the existence of a fire has been definitely ascertained, every workman, except those engaged in combating the fire, shall be withdrawn from the seam in which the fire exists and from every other seam communicating with the shaft on the same level, and shall not be readmitted until an examination has been made and the seam or seams reported to be safe in the manner indicated above :

Provided that—

(a) it shall not be necessary to withdraw the workmen on the intake side of the fire if the seam, or in cases to which proviso (b) applies, the ventilating district, in which the fire exists is naturally wet throughout, and it is reported after examination made in the manner indicated above that it is safe for such men to remain ;

(b) it shall only be necessary to withdraw the workmen from the ventilating district or districts in which the fire exists if each ventilating district in the seam is adequately protected against the spread of an explosion of coal dust from any other district by some means approved by the Minister ;

(c) it shall not be necessary to withdraw the workmen from any seam communicating with the shaft on the same level if such seam is naturally wet throughout or is adequately protected against the spread of an explosion of coal dust from the seam in which the fire exists by some means approved by the Minister.

(iii) While a fire is being dammed off, every workman in the mine, except the men engaged in the work of damming off the fire, shall be withdrawn from the mine, and shall not be readmitted after the completion of the work until an examination has been made, and the mine reported to be safe, in the manner indicated above.

There shall be available during the whole time, at or near the place, two suits of breathing apparatus or two smoke helmets,* and persons competent to use them.

(iv) Such means as may be approved by the Minister for the purpose shall be taken to render harmless the coal dust in all accessible parts of the mine immediately contiguous to the seat of the fire.

(v) The Minister may, after consultation with the owners and the representatives of the miners, by order modify the requirements of this regulation in respect of any mine, to such extent and subject to such conditions as he may think fit, if he is satisfied that this can be done without danger in view of the special character of the mine.

10.—Where in any mine or part of a mine to which the foregoing regulation does not apply the existence of a fire has been definitely ascertained—

* For lists of approved types of breathing apparatus and of smoke helmets see page 251.

an examination of the place in which the fire exists shall be made in the manner indicated above, and if any part is reported to be dangerous the workmen, except those engaged in combating the fire, shall be withdrawn from such part. Provided that if there is a disagreement between the manager or under-manager and the representatives of the workmen as to whether any part is dangerous or not, or has been rendered safe, the question shall be referred to the inspector of the division or the Senior Inspector of Mines,* whose decision shall be final.

When the workmen have been withdrawn from any part of the mine in pursuance of this regulation they shall not be readmitted until a further examination has been made and such part reported to be safe in the manner indicated above.

PART III.

11-27.—(*Revoked by the Coal Mines General Regulations (Rescue), 1928—page 140.*)

PART IV.

28.—(*Electricity on Surface. This regulation details the modifications to Part III of the General Code of 1913 in its application to apparatus used above ground. These amendments are incorporated in the regulations as indicated in the note at the beginning of Part III—See page 50.*)

PART V.

29.—(*Revoked by the Coal Mines (Shallow Workings and Dangerous Deposits) General Regulations, 1952—page 153.*)

PART VI.

MISCELLANEOUS.

30.—(*Amends No. 92 of the General Code of 1913—page 46.*)

31.—(*Revoked by the Coal Mines General Regulations (Safety Lamps), 1927.*)

32.—When a shaft is being sunk through water-bearing strata, at least four ladders shall be provided from the bottom of the shaft as a means of escape in case of emergency to the surface or some other place of safety. Provided that where not more than ten persons are employed below ground at any one time, it shall not be necessary to provide more than two ladders.

33.—(*Amends No. 128 (c) of the General Code of 1913—page 55.*)

* *i.e.*, the inspector in charge of the district.

C. OTHER REGULATIONS AND ORDERS*

(In alphabetical order of subject matter.)

PRECAUTIONS AGAINST COAL DUST (SECTION 62).

Coal Mines General Regulations (Precautions against Coal Dust), 1939, No. 1803.

1.—In these regulations :—

“ *Inspector* ” means the inspector of the division.

“ *Sieve* ” means a sieve made to the specification for test sieves of the British Standards Institution.

“ *Road* ” includes all roads of any description extending from the shaft or outlet to within ten yards of the coal face, but chutes from the coal face down which coal is thrown, offices, stables, engine-houses, motor switch and transformer rooms and pump-rooms, shall not be deemed to form part of any road.

“ *Travelling Road* ” means a road used by the main body of any shift employed in the mine for travelling to or from their working places, and where the mine is divided into districts, the road so used by the main body of men employed in a district.

2.—The regulations shall apply to all mines in which coal other than anthracite is worked.

3.—Such measures shall be taken for the prevention, suppression, collection and removal of coal dust and for treating it with incombustible dust or in other manner approved by the Minister as will ensure that on the floor, roof and sides, respectively, of every road or part of a road which is accessible, the dust which can be raised into the air shall contain, when tested in the manner hereinafter prescribed, not less than the percentage of incombustible matter set out in the schedule to these regulations according to the volatile matter content of the coal.

The percentage of incombustible matter means the actual percentage of incombustible matter (including moisture) contained in the dust, plus any percentage allowance permitted on account of any of the incombustible matter which is of superior efficacy as compared with ordinary shale dust. The permitted percentage allowance, if any, shall be calculated from the analysis of the dust in the appropriate manner prescribed by the Minister.

The volatile matter content of the coal means the average volatile matter content calculated on an ash-free dry basis of the seam of coal worked through the road (or if more than one seam is so worked of that seam which has the highest average volatile matter content) and shall be deemed to be more than 35 per cent. unless the contrary

* The regulations and orders relating to the Mining Qualifications Board and to matters within its province are included in Part Three.

has been proved by an analysis made and communicated to the inspector within the previous 12 months. The analysis shall be made by one of the methods specified by the British Standards Institution and the sample of coal used for such analysis shall be taken either from a representative section of the seam or from a representative quantity of the run-of-mine coal from the seam :

Provided that—

(i) the foregoing requirements shall not apply to any road through which anthracite only is worked ;

(ii) in any seam in which inflammable gas is unknown and in which no explosive other than a sheathed permitted explosive is used in any road or ripping or any dry and dusty part of the mine, the percentage of incombustible matter shall not be required to be more than 50 per cent. if that is the natural condition of dust throughout the road, or more than 60 per cent. if the road is treated with incombustible dust ;

(iii) in roads supported by steel arches, and in other roads except where otherwise directed by the inspector, it shall suffice if the foregoing requirements are complied with in respect of the dust on the roof and sides taken together instead of the dust on the roof and the sides respectively ;

(iv) when the dust on the floor of a road is systematically treated in a manner approved by the Minister so as to consolidate it and render it indispersable, it shall suffice (unless otherwise directed by the inspector) if the foregoing requirements are complied with in respect of the dust on the floor, roof and sides taken together and sampled, under No. 6 (b) of these regulations, to a depth of one quarter of an inch as near as may be.

4.—The incombustible dust used for the purpose of these regulations shall be—

(a) of such fineness that, of the dry dust which passes through a 60-mesh sieve not less than 50 per cent. by weight and, except with the permission in writing of the Minister, not more than 75 per cent. by weight shall pass through a 240-mesh sieve ;

(b) of such character that it is readily dispersable into the air and, when in use in places where it is not directly wetted by water from the strata, does not cake but is dispersed into the air when blown upon with the mouth or by a suitable appliance.

No incombustible dust shall continue to be used if it is found by tests, which shall be carried out regularly, not to comply with these requirements.

5.—No dust shall be used for the purpose of complying with these regulations of a kind which may be prohibited by the Minister on the ground that it is likely to be injurious to the health of persons working in a mine :

Provided that if any dispute arises as to whether the dust is likely to be injurious, it shall be determined in the manner provided by the Act for settling disputes.

6.—The following steps shall be taken for the purpose of ensuring that No. 3 of these regulations is complied with—

(a) Samples of the dust shall be systematically collected and analysed, and, in respect of roads used for the transport of coal, and of return airways within 200 yards of the working face, the number of samples collected and analysed during each calendar month shall not be fewer (except with the consent in writing of the inspector) than in the proportion of ten per mile of those roads and airways :

Provided that if analyses of the samples collected from any road have shown that the natural conditions of the road are such that No. 3 of these regulations is complied with, or have shown, in respect of roads not used for the transport of coal and not within 200 yards of a working face, that the application of additional incombustible dust has not been required more than once in every six months, it shall suffice, so long as there is no visible change in the conditions, to collect and analyse the samples at intervals not exceeding three months, or at such longer intervals as may be authorised in writing by the inspector.

(b) The samples of dust so collected shall be representative samples, and each sample shall be collected over a section of road not less than 50 yards in length and shall comprise the dust collected to a depth of one quarter of an inch as near as may be on the roof and the sides and a depth not exceeding one inch on the floor, either

(i) by a method of strip sampling, by which the dust is collected from a succession of transverse strips as nearly as possible of equal width and equally spaced not more than five yards apart, of an aggregate area not less than 1·0 per cent. of the total area sampled ; or

(ii) by a method of spot sampling by which one sub-sample or increment of dust for each yard of the length sampled is collected, as nearly as possible at regularly spaced intervals along a zig-zag path :

Provided that if, since a sample was last collected over such a section of road, some part of that section has been treated with incombustible dust more frequently or more recently than other parts, separate samples shall be collected over the several parts irrespective of their lengths.

(c) Each sample shall be well mixed and quartered, and a representative portion of the mixture shall be sieved through a 60-mesh sieve and analysed by the appropriate method pre-

scribed* by the Minister ; provided that if any dispute arises as to the correctness of any of the methods of analysis prescribed it shall be determined in the manner provided by the Act for settling disputes.

(d) Within 21 days of the taking of each sample the analysis shall be posted at the pithead and shall be recorded, with such other information as may be prescribed,† in a book to be kept at the mine for the purpose.

(e) Except at mines employing less than 100 persons underground, each analysis shall be given in the book a distinctive colour, number, letter or mark, identifying it as relating to a particular length of road which shall be legibly marked in the same way on a suitable plan or plans kept for the purpose with the book.

7.—(*Substitutes new provisions for Section 62(3) of the Coal Mines Act, 1911—page 25.*)

8.—Before material consisting wholly or largely of coal dust is transported in a tub through any part of the mine which contains electrical cables or apparatus, effective measures shall be taken, in accordance with directions to be given by the Manager, so to enclose the material as to prevent the coal dust from being thrown into the air in the event of the tub being upset.

SCHEDULE (Regulation 3).

MINIMUM PERCENTAGE OF INCOMBUSTIBLE MATTER REQUIRED FOR COALS OF VARIOUS VOLATILE MATTER CONTENTS.

| Average volatile matter content of coal. (Per cent.) | | Minimum percentage of incombustible matter required. |
|--|----|--|
| Not exceeding | 20 | 50 |
| | 22 | 55 |
| | 25 | 60 |
| | 27 | 65 |
| | 30 | 68 |
| | 32 | 70 |
| | 35 | 72 |
| Exceeding | 35 | 75 |

* See the Mine Dust Analysis Order, 1939, No. 1805, page 73.

† The prescribed form of book is M. and Q. Form No. 41.

The Mine Dust Analysis Order, 1939, No. 1805.

[The following order prescribes the procedure to be adopted for determining the percentage of incombustible matter in samples of dust collected for the purpose of ensuring that No. 3 of the foregoing regulations is complied with.]

1.—(a) The sample of dust shall be sieved through a 60-mesh sieve. The sieve may be tapped lightly to assist the passage of the dust through the sieve, but the dust shall not be rubbed through the sieve. The dust that passes through the sieve shall be kept in an air-tight container until it is analysed.

(b) If a dust sample is too damp to be sieved through the 60-mesh sieve, it shall be sieved through an 18-mesh sieve and the fraction passing through that sieve shall be allowed to dry in the air during one hour and thereafter shall be sieved through a 60-mesh sieve, as described in the preceding paragraph. The percentage loss of moisture from the dust during the preliminary drying in the air shall be determined and a correction shall then be made to the determined incombustible content of the dust which has passed through the 60-mesh sieve.*

(c) The sieves used shall be made to the specification for test sieves of the British Standards Institution.

2.—The samples of dust prepared as aforesaid shall be analysed as follows :

(a) *Dust Samples which contain no Carbonates or Gypsum.*

(i) A weighed quantity of the sieved dust shall be dried at a temperature between 105° and 110° C., and the weight lost shall be reckoned as moisture.

(ii) The residue shall then be brought to red-heat in an open vessel until it no longer loses weight. The weight of the incinerated residue added to the weight of the moisture shall be reckoned as incombustible matter and be expressed as a percentage of the total weight of the sieved dust.

(b) *Dust Samples which contain Carbonates.*

(i) A weighed quantity of the sieved dust shall be dried at a temperature between 105° and 110° C., and the weight lost shall be reckoned as moisture.

(ii) The residue shall then be heated in an open vessel to a temperature of at least 950° C. until it no longer loses weight. The incinerated residue shall be weighed.

* This correction shall be calculated as follows : If M is the percentage loss in weight of the dust passing the 18-mesh sieve during air-drying, and I is the percentage of total incombustible matter in the dust passing the 60-mesh sieve, then the corrected total incombustible content of the dust per cent. is :—

$$M + I \frac{(100 - M)}{100}$$

(iii) A weighed quantity of the sieved dust shall be treated with dilute hydrochloric acid in a suitable apparatus and the weight of carbon dioxide evolved from the dust shall be either (a) determined directly or (b) calculated from the volume of carbon dioxide evolved, or (c) determined in any other manner approved by the Minister.

(iv) The sum of the weights of moisture, carbon dioxide and incinerated residue, shall be reckoned as incombustible matter and be expressed as a percentage of the total weight of the sieved dust.

(c) *Dust Samples which contain Gypsum.*

(i) A weighed quantity of the sieved dust shall be dried at a temperature between 135° and 140° C., and the weight lost shall be reckoned as moisture.

(ii) The residue shall then be brought to a red-heat in an open vessel until it no longer loses weight. The weight of incinerated residue added to the weight of moisture shall be reckoned as incombustible matter and expressed as a percentage of the total weight of the sieved dust.

(d) *Dust Samples which require special methods of analysis.*

Dust mixtures for which the foregoing methods of analysis are shown to be unsuitable shall be analysed by such other methods as may from time to time be prescribed by the Minister.

NOTIFICATION OF DANGEROUS OCCURRENCES.

Order dated 22 December, 1906, No. 934.

[*Made under Section 5 of the Notice of Accidents Act, 1906.*]

Under this order the provisions of the said Act requiring notice of accidents in mines and quarries to be given to an inspector were extended to the following classes of occurrences, whether personal injury or disablement is caused or not—

all cases of ignition of gas or dust below ground other than ignitions of gas in a safety lamp ;

all cases of fire below ground ;

all cases of breakage of ropes, chains, or other gear by which men are lowered or raised ;

all cases of overwinding cages while men are being lowered or raised ;

all cases of inrush of water from old workings.

EXPLOSIVES AND BLASTING APPLIANCES (SECTION 61).

Coal Mines (Explosives) Order, 1951, No. 1675.

[*Made under Section 61 of the Coal Mines Act, 1911.*]

PART I.

APPLICATION OF ORDER.

1.—(1) This order applies to all mines in which coal is worked, or is intended to be worked.*

(2) Nothing in this order except this article, Article 56 and the first schedule applies to apparatus, or to cartridges of explosive, of a type approved for use in mines for destroying horses. The provisions set out in that schedule shall be complied with by every person concerned with the storage, taking below ground or use in any mine of any such apparatus or cartridge.

PART II.

TYPES OF EXPLOSIVES AND DETONATORS, AND THEIR STORAGE AND CONVEYANCE.

Types of explosives and detonators.†

2.—(1) No explosive (which expression does not in the provisions contained in this order include a detonator) shall be taken or used below ground in any mine, unless it is in the form of a cartridge.

(2) No explosive other than a permitted explosive (as defined in this order) shall be—

(a) taken below ground or used in any mine in any part of which safety lamps are required to be used ; or

(b) taken into or used in any part of a mine, being a part which is dry and dusty or in which safety lamps are being used as a temporary precaution.

(3) No explosive other than a permitted explosive shall be used in a main intake airway or coal transport road in any mine.

(4) Any dispute between the manager of a mine and the inspector of the division whether a part of the mine is dry and dusty shall be determined in manner provided under the Act for settling disputes ; and, until so determined otherwise, that part shall be deemed to be dry and dusty.

* The use of explosives at mines of stratified ironstone, shale and fireclay is still governed by the Explosives in Coal Mines Order, 1934, No. 6, and the Explosives in Coal Mines (Horse Killers) Order, 1931, No. 521 (which are reproduced in the 1951 edition of this volume or may be purchased separately from H.M. Stationery Office). A new order to bring up to date the provisions relating to the use of explosives at these classes of mines is in preparation.

† Section 61(2) of the Coal Mines Act, 1911, provides that " no explosives shall be taken into or used in any mine except explosives provided by the owner, and the price, if any, charged by the owner to the workmen for any explosives so provided shall not exceed the actual net cost to the owner ".

3.—(1) No detonator shall be used in firing a round of shots electrically, unless—

- (a) it is a low tension detonator or a delay detonator ; and
- (b) it has copper leading wires.

(2) No delay detonator shall be taken or used below ground, unless the period of delay (which shall not exceed five seconds) is clearly marked thereon.

(3) In any mine or part of a mine in which permitted explosives are required to be used—

- (a) no detonator shall be used, unless it is an electric detonator with a copper tube ; and
- (b) no delay detonator shall be used, except in a stone drift or sinking pit.

*Storage of explosives and detonators.**

4.—(1) Every place appointed by the manager as a store for, or as premises for the keeping of, explosives or detonators shall be on the surface.

(2) For the deposit of explosives and detonators brought out of the mine at the end of each shift, there shall be at least one place so appointed situate conveniently near to each exit from the mine normally used by workmen.

(3) The manager shall appoint in writing one or more competent persons to have charge of each place so appointed, whenever explosives or detonators are required to be issued or returned.

5.—(1) No safety fuse intended to be used for firing shots shall be stored elsewhere than at a place appointed under Article 4.

(2) No safety fuse shall be capped with a detonator in or about a mine elsewhere than in a workshop subject to Section 47 of the Explosives Act, 1875.

6.—(1) All detonators shall be in the sole charge of the manager, or, during any shift for which the manager has in writing appointed a competent person to have charge of the detonators at a place appointed under Article 4, of that person.

(2) No detonator shall be taken from any place so appointed, except by the written authority of the manager, or on issue for use as provided in this order.

Conveyance of explosives.

7.—(1) Subject to the provisions of Article 8, no explosive shall be taken into any mine, unless it is in a closed canister stoutly constructed and containing not more than five pounds of explosive :

* See the memorandum on the storage of explosives printed as an appendix to this volume.

Provided that nothing in this paragraph shall restrict the conveyance (subject to Article 41) of primer cartridges fitted with detonators for the purpose of sinking operations from the surface.

(2) Every person having any canister of explosives in his possession or control shall ensure that it is not deposited except in a place of safety.

(3) Unless the shot firer concerned requires to check the quantity of the explosive, or the explosive is required immediately for charging a shot hole, or the act in question has been authorised by a deputy or a superior official of the mine, no person below ground shall unlock or open any canister of explosives or take any explosive from any canister.

8.—(1) If a scheme for the conveyance of explosives in bulk (in this order referred to as a “scheme of transit”) is in operation under paragraph (2) for any mine or part of a mine, explosives packed at a place appointed as a store in securely locked canisters of any size may, subject to the provisions of this article, be conveyed in accordance with the scheme in a special carriage to one or more reserve stations in that mine or that part.

(2) No scheme of transit shall be operated, unless—

(a) it makes provision adequate for safety to the satisfaction of the inspector of the division for each of the matters specified in the second schedule to this order ; or

(b) it has been determined, in manner provided under the Act for settling disputes, to make provision adequate for safety for each of them.

(3) Where any scheme of transit is in operation, a copy thereof shall be attached to the copy of this order posted at or near the mine in pursuance of Article 53 ; and a copy of the scheme shall be supplied to each shot firer employed at the mine.

(4) The total quantity of explosives conveyed into a mine under a scheme of transit in any period of 24 hours shall not exceed the quantity estimated to be required for use during the period of 24 hours next following.

(5) No explosives shall, while being conveyed in bulk, be taken nearer to a working face than the reserve station nearest to that face, unless the relevant scheme of transit expressly so provides.

(6) The person in charge of the explosives at any reserve station shall, before the end of his shift, ensure that any of the same remaining unused, and not delivered by him to a person appointed to have charge of them during the next following shift, are returned to the store from which they were taken into the mine.

Issue and conveyance of detonators.

9.—(1) No person shall be in possession of any detonator, unless he is a person to whom it has been issued for use, or a person authorised to be in possession of it by the manager in writing.

(2) No detonator shall be issued for use except to a shot firer (as defined in Article 11).

10.—(1) No detonator shall be taken into the mine except in a securely locked detonator case, provided by the owner of the mine :

Provided that, subject to the precautions specified in Article 41, primer cartridges may be fitted with detonators in a workshop subject to Section 47 of the Explosives Act, 1875, and thereafter taken into the mine, for the purpose of sinking operations from the surface.

(2) No detonator shall be put into a detonator case which contains a detonator of any other type.

(3) No detonator case shall be issued to a shot firer, unless it is so constructed and maintained that, when the case is closed, it is impossible for any detonator, or the leads of any detonator, contained therein to touch any metal which is exposed outside the case, or is in contact with any other metal so exposed.

PART III.

APPOINTMENT, QUALIFICATION AND EQUIPMENT OF SHOT FIRERS.

Persons to fire shots.

11.—(1) No person shall fire a shot in any mine, unless he has been appointed to fire shots by the manager in writing (any person so appointed being, in this order, referred to as a "shot firer")

(2) No shot firer shall fire a shot in any mine by means of a delay detonator, or in a round of more than six shots, unless in his said written appointment he is expressly authorised to do so.

(3) No shot firer firing shots in the regular course of his employment in any mine or part of a mine in which permitted explosives are required to be used shall be paid by wages depending upon the amount of mineral, rock or other debris gotten :

Provided that this paragraph shall not apply—

(a) in a part of a mine where permitted explosives are required by reason only that safety lamps are being used as a temporary precaution ; or

(b) to a master-sinker or chargeman employed on sinking operations.

Qualification.

12.—(1) No person shall be qualified to be appointed or to be a shot firer in any mine, unless he—

(a) is 22 years of age or more (subject to such reduction, not exceeding one year, in respect of special qualification, as may be approved by the Minister, or by a person authorised by him in that behalf), and has had the experience specified in paragraph (2) ; or

(b) is the holder of a service certificate made under paragraph (6).

(2) The experience aforesaid is three years' practical experience below ground, including not less than 18 months in the aggregate spent in—

(a) getting or cutting coal ;

(b) ripping ;

(c) setting or withdrawing supports at the coal face ;

(d) hole boring or packing at the coal face ;

(e) (for not more than six of the said 18 months) driving stone drifts or repairing or enlarging roads ; or

(f) (in so far as concerns a master-sinker or chargeman employed on them), sinking operations.

(3) No person shall be qualified to be appointed or to be a shot firer in any mine or part of a mine in which permitted explosives are required to be used (not being such a mine or part by reason only that safety lamps are being used as a temporary precaution), unless he is qualified under paragraph (1) and also—

(a) has the qualification specified in paragraph (4) ; and

(b) has within the last preceding five years obtained a certificate granted as prescribed in rules made by the Mining Qualifications Board, in relation to the qualification of deputies, in pursuance of Section 15 of the Act, as amended by the Coal Mines (Officials and Inspections) General Regulations, 1951, that he was then able to make accurate tests for inflammable gas (so far as practicable with a flame safety lamp).

(4) The qualification aforesaid is that either—

(a) he is the holder of a first or second-class certificate of competency under the Act ;

(b) he is the holder of a shot firer's certificate granted to him by the Minister (after receipt of a report by the Mining Qualifications Board that he possesses the necessary qualifications under the Act) and has spent not less than five shifts in practising shot firing in a mine under the close personal supervision of a shot firer ; or

(c) his service certificate under paragraph (6) states that the mine concerned was a mine to which Part II of the Explosives in Coal Mines Order, 1934, applied.

(5) No shot firer shall be appointed to fire shots in any mine by means of a delay detonator, or in a round of more than six shots, unless he has, during not less than five shifts, been employed in connection with the firing of such shots under the close personal supervision of a shot firer appointed to fire such shots, who was not then supervising any other person for the purposes of this paragraph.

(6) A service certificate made under this paragraph is a certificate on a form provided for the purpose by the Minister, made during the period beginning on 1 April and ending on 30 June, 1953, by the manager of a mine, and authenticated, within 14 days of being made, by the owner of the mine or a representative of the owner superior to the manager, certifying that the holder is a person who at sometime before the said 1 April had regularly fired shots in the course of his employment in that mine, and who, immediately before that day, was qualified to do so under the provisions which then had effect.

(7) Any certificate required to be held as a qualification under this article by any person for the time being employed as a shot firer at any mine shall be kept at the office of the mine, and shall be produced on demand to any inspector, or to any person making an inspection in pursuance of an appointment by workmen under Section 16 of the Act.

Tools, apparatus and equipment.

13.—(1) For each shot firer on duty, there shall be provided—

(a) a tool, made entirely of wood, suitable for charging and stemming shot holes ;

(b) a scraper suitable for cleaning out shot holes ; and

(c) in a mine in any part of which safety lamps are required to be used, or in any part of a mine in which such lamps are being used as a temporary precaution, a break detector of an approved design* (subject to paragraph (2)), which may incorporate the scraper.

(2) The requirement that a break detector is to be of an approved design shall not apply until the expiry of two years from the commencement of this order†, so however that, after the expiry of six months from the said commencement, no new break detector shall be provided unless it is of an approved design.

14.—(1) No shot shall be fired in any mine except by means of apparatus or fuse provided by the owner.

(2) In any mine or part of a mine in which permitted explosives are required to be used, no shot shall be fired (otherwise than in sinking operations) except by means of electric shot firing apparatus of a type approved—

(a) if shots are being fired in a round, for multi-shot firing with all explosives ; or

(b) in any other case, for single-shot firing with all explosives :

Provided that, where the inspector of the division is satisfied that, for the time being, no apparatus approved for multi-shot firing with all explosives is available, shots may be fired in a round by means of other apparatus approved by him.

* See page 253.

† i.e. until 1 February, 1954.

(3) In sinking operations or in a part of a mine where permitted explosives are not required to be used, no shot shall be fired except by means of—

(a) electric shot firing apparatus of a type approved—

(i) if shots are being fired in a round, for multi-shot firing with all explosives or for multi-shot firing with explosives which are not permitted explosives ;

(ii) in any other case, for single-shot firing with all explosives or for single-shot firing with explosives which are not permitted explosives ; or

(b) subject to the provisions of Article 41, safety fuse as defined in this order.

(4) The two last foregoing paragraphs are subject to the provisions of Articles 44 and 48 (which permit shot firing apparatus of a type approved for multi-shot firing to be used in certain cases to determine whether a shot is a single-shot miss-fire, or to fire shots singly in the event of a miss-fire in a round).

(5) If a part of a mine in which permitted explosives are not required to be used was immediately before the commencement of this order a part in which they were not required to be used under the provisions which then had effect, electric shot firing apparatus shall not in that part be required to be of an approved type as aforesaid until the expiry of two years from the said commencement, so however that, after the expiry of six months from that commencement, no new apparatus shall be provided for firing shots there electrically unless it is of such a type.

(6) No electric shot firing apparatus shall be taken or used below ground, unless, at the last previous test thereof under Article 15, it was found to be in proper order.

(7) Except where safety fuse capped with a detonator is used, no shot shall be fired by means of a detonator and safety fuse.

(8) Each shot firer appointed to fire any shot electrically shall be equipped with the necessary cable,* provided by the owner and being of a specification approved—

(a) for multi-shot firing, if shots are to be fired in a round ; or

(b) for single-shot firing, in any other cases :

Provided that nothing in this paragraph shall restrict the use of any cable which was in use, or was required to be delivered under a contract made, before the commencement of this order.

15.—(1) All electric shot firing apparatus shall, once at least in every three months, be thoroughly cleaned and overhauled by the manufacturer, or by a competent person appointed for the purpose by the manager in writing.

* As regards shot firing cables, *see also* No. 133 of the General Regulations of 10 July, 1913 (page 59).

(2) All electric multi-shot firing apparatus shall, once at least in every seven days, be tested at the surface in the manner prescribed in the third schedule to this order.

(3) If, in connection with the firing of a round of shots electrically, any miss-fire in a round after firing occurs (as defined in Article 48), the shot firing apparatus used shall be tested in the manner aforesaid before it is again taken below ground.

(4) The dates of all cleaning and overhauls, and the results of all tests, carried out in pursuance of this article shall be recorded in a book* to be kept at the mine for the purpose.

PART IV.

SHOT FIRING (ALL MINES).

Explosives.

16.—(1) No shot firer shall allow more than one canister of explosives to be open at any one time for charging shot holes for which he is responsible.

(2) Any person having any surplus explosives in his possession at the end of his shift shall return the same personally—

(a) if the explosives were issued from a reserve station, to that station, or to the person appointed under the relevant scheme of transit to be in charge of the explosives ; or

(b) in any other case, to a place appointed by the manager under Article 4 as a store for, or as premises for the keeping of, explosives or detonators.

Detonators.

17.—(1) Any shot firer to whom a detonator case has been issued shall—

(a) retain the key of the case in his own possession throughout the period while he is on duty ;

(b) ensure that, apart from any check sheet of shots fired by him in the shift then current, nothing except detonators is kept in it ;

(c) keep it separate from any other receptacle containing explosives ; and

(d) if at any time it is not on his person, ensure that it is kept in a safe place, and (unless he remains in the immediate vicinity) in a securely locked box which does not contain any explosive.

(2) No shot firer shall remove any detonator from the detonator case, unless it is required for immediate use.

(3) Any shot firer or other person having any detonator in his possession at the end of his shift shall return it personally to a place appointed under Article 4.

* The prescribed form of record is M. & Q. Form No. 154.

Shot holes, generally.

18.—(1) No shot hole shall be drilled except by means of a drill or drills whereof the diameter, throughout the drilling, exceeds the diameter of any cartridge to be inserted by not less than one eighth of an inch.

(2) No person shall, for the purpose of testing, cleaning out or charging any shot hole, use any tool other than the appropriate tool provided for the purpose by the owner.

19.—(1) No person shall begin to charge any shot hole, until it has been thoroughly cleaned out.

(2) No person shall use compressed air to clean out a shot hole, unless he takes reasonable measures for the suppression of dust.

Charging shot holes.

20.—(1) So far as is practicable, a shot hole shall be charged, and the shot fired, in the same shift and by, or under the supervision of, the same person.

(2) No shot hole shall be charged until the shot is about to be fired.

(3) No person shall begin to charge any shot hole, unless he has satisfied himself by taking all reasonable precautions that it is so placed and drilled as to be safe for the firing of a shot.

(4) Except in the case of shots to be fired in one round (as defined in Article 55), or of a relieving shot for the purposes of a miss-fire, no shot hole shall be charged if there is a charged shot hole within 30 yards.

(5) No shot hole shall be charged as one of a round in a stone drift, heading, ripping or sinking pit, until all shot holes for that round have been completely drilled.

21.—(1) The charge shall consist of one or more complete cartridges of the same diameter and the same description of explosive.

(2) The person charging a shot hole shall to the best of his judgment ensure that it is not overcharged, having regard to the task to be performed.

(3) Except as provided in Article 46 or 49 in relation to a miss-fire, no charged shot hole shall contain more than one detonator.

(4) Where a delay detonator is to be used, and the charge is to consist of more than one cartridge, the primer cartridge shall be inserted first, with the detonator at the back of the hole.

(5) No person shall remove any external sheathing from a sheathed explosive.

(6) No explosive shall be forcibly pressed into a shot hole.

(7) The charge shall be stemmed with sufficient suitable and non-inflammable stemming to prevent a blown out shot.

22.—(1) Except where an approved device for pneumatic stemming is being used, no person shall insert any tool not made entirely of wood into a shot hole containing explosive.

(2) No person shall from any charged shot hole—

(a) remove any stemming otherwise than by means of water or of an approved device ;

(b) pull out any detonator lead ; or

(c) remove any explosive.

Firing shots.

23. No shot firer shall fire any shot, unless he has satisfied himself, by taking all reasonable precautions, that it is in a shot hole so placed and drilled as to be safe for the firing of a shot, and is charged and stemmed in accordance with the provisions of this order.

24. Each shot firer shall keep a daily record in a prescribed form* of all shots fired by him.

25.—(1) This article shall apply in relation to all shots fired electrically.

(2) No person shall open or interfere with any shot firing apparatus below ground.

(3) A shot firer to whom any shot firing apparatus has been issued—

(a) shall retain the removable handle or key in his own possession throughout the period while he is on duty ;

(b) shall not place it in position in the apparatus unless he is about to fire a shot, and shall remove it from the apparatus immediately after firing each shot.

(4) No shot firing apparatus shall be used which is defective ; and if any such apparatus is found to be defective, or fails to fire all the shots in any properly connected round at one operation, the shot firer shall cause it to be returned to the surface as soon as practicable, and shall report the circumstances to the manager in writing.

(5) Except in a stone drift or a sinking pit, not more than six shots shall be fired in any one round.

(6) Detonators in a round shall be connected in series ; no detonator shall be so connected unless it has leading wires of sufficient length for any necessary connection to an adjoining detonator to be made without the insertion of additional wire.

(7) No cable shall be used for firing shots, unless it is cable provided by the owner for that purpose.

No person shall use for any other purpose any cable so provided.

* The prescribed form is M. & Q. Form No. 52.

(8) No cable shall be used for firing shots, if its length is less than—

(a) 20 yards, when a single shot (not in a sinking pit) is being fired ;

(b) 50 yards, when a round of shots in coal is being fired ;

(c) 70 yards, when a round in stone of six shots or less is being fired ; or

(d) 200 yards, when a round in stone of more than six shots, or any shot in a sinking pit, is being fired.

(9) The shot firer concerned shall ensure that a cable used for firing shots cannot make contact with any other cable or electrical apparatus.

(10) No person other than the shot firer shall couple any shot firing cable to the shot firing apparatus, or to any detonator ; no shot firer shall couple a shot firing cable to shot firing apparatus for the purpose of firing any shot, unless the cable has already been coupled to the detonator or detonator circuit.

(11) No shot firer shall fire any round, unless he has successfully tested the circuit for continuity by means of an approved testing device,* but he shall make no such test unless—

(a) all persons in the vicinity have withdrawn to a place of safety ; and

(b) he is himself either not nearer to the shots than the firing station, or in a shelter placed at a safe distance from the shots.

(12) In the event of a test in pursuance of paragraph (11) being unsuccessful, the provisions of the seventh part of this order (which relates to miss-fires) shall apply.

26.—(1) This article shall apply in relation to all shots fired by fuse.

(2) No shot shall be fired by a fuse shorter, for a single shot, than three feet, or, for a round, than four feet.

(3) Not more than one shot firer shall fire shots at any one time in any working place, or at any working face which does not exceed 50 yards in length.

(4) At any working face exceeding 50 yards in length, no shot firer shall fire any shot within 50 yards of a charged shot hole, unless he has satisfied himself that no other shot firer is about to fire it.

(5) Except where an approved means of firing a round is used, no shot firer shall attempt to fire more than four shots at any one time.

(6) The shot firer concerned shall ensure that—

(a) no person handling any explosive, or charging any shot hole, either smokes or allows any naked light to be directly above, or within four feet of, any explosive or detonator, or within four feet of any shot hole ;

(b) all surplus explosives are removed from the vicinity of a shot hole before a light is brought near to it for the purpose of firing the shot.

* See page 253.

Warning and shelter.

27. In every case where a shot may blow through into another place, the shot firer concerned shall cause due warning to be given to all persons in that place ; and he shall, after firing, cause notice to be given to them that the period of danger is ended.

28.—(1) Any shot firer proposing to fire a shot shall, before firing, determine the danger zone likely to be created.

(2) No shot firer shall fire any shot, unless he has—

(a) at each entrance to the zone aforesaid, either posted a sentry or placed an appropriate fence conspicuously marked with the words “ danger ” and “ shot firing ” ;

(b) ensured that all persons have withdrawn from the said zone or have taken proper shelter ; and

(c) himself taken proper shelter.

29.—(1) Every person to whom a shot firer gives any instruction with respect to taking shelter shall comply therewith.

(2) No person posted to be a sentry for the purposes of shot firing shall leave the place where he was posted, unless personally authorised to do so by the shot firer concerned.

(3) No person shall pass a danger sign exhibited for the purposes of shot firing, or a sentry who has forbidden him to pass, unless authorised to do so by the shot firer concerned.

Precautions after firing.

30.—(1) Subject to the provisions of paragraph (2) of this article, any shot firer who fires a shot shall thereupon—

(a) ascertain by a personal examination whether it is safe for ordinary working to be resumed in each working place affected by that shot ; and

(b) ensure that all necessary action is taken to make each such place safe for such working.

(2) Where shots have been fired in a round—

(a) the examination aforesaid shall not be made, if it was a round of six shots or less, before the expiry of five minutes, or, in any other case, before the expiry of ten minutes ;

(b) the shot firer shall, in the course of his examination, examine—

(i) for sockets in the face, and for any explosive remaining in any such socket ; and,

(ii) if he has reason to think that any shot may not have exploded, for any unexploded charge in the material brought down.

31. After a shot has been fired, no person shall enter the danger zone determined by the shot firer concerned for the purposes of shelter, until authorised by him to do so.

PART V.

SHOT FIRING (ADDITIONAL PROVISIONS, PERMITTED EXPLOSIVES).

Application of Part V.

32. Except where the application of provisions is limited by reference to the use of safety lamps, this part of this order shall apply to any shot fired in any mine or part of a mine in which permitted explosives are required to be used.

Shot firer's maximum number of shots.

33.—(1) For each shot firer firing shots in the regular course of his employment, the manager shall, subject to the provisions of paragraphs (3) and (4) of this article, fix the maximum number of shots which he may fire in any one hour and in any one shift, being in each case a number consistent with the requirements of safety :

Provided that the numbers so fixed shall not apply to shots fired in rounds of more than six shots.

(2) If the manager proposes to fix a maximum exceeding ten for any one shift for any deputy in charge of a district, he shall give notice in writing of the maximum proposed to the inspector of the division, on a prescribed form.*

(3) If the inspector of the division, before the expiry of 14 days from his receipt of a notice under paragraph (2), notifies the manager that in his opinion the maximum proposed does not comply with paragraph (1), no maximum exceeding ten shall be fixed for the deputy concerned unless it is agreed by the inspector and the manager, or determined in manner provided under the Act for settling disputes, to be consistent with the requirements of safety.

(4) The inspector of the division may object to any maximum fixed under this article, on the ground that that maximum does not comply with paragraph (1) ; and, if, in any such case, the manager does not fix another maximum for the shot firer concerned to the satisfaction of the inspector, the matter shall be determined in the manner aforesaid:

Provided that this paragraph shall not apply to any maximum to which paragraph (2) or (3) applies, unless there has been a material change of circumstance since the date of the notice or of the agreement or determination, as the case may be.

(5) Each maximum fixed under this article shall be notified in writing to the shot firer concerned, and shall be recorded in a book† to be kept at the mine for the purpose.

* The prescribed form is M. & Q. Form No. 139.

† The prescribed form of record is M. & Q. Form No. 139A.

(6) No shot firer shall in any one hour or in any one shift fire a greater number of shots than the appropriate maximum notified to him under paragraph (5).

Firedamp content.

34.—(1) This article shall apply only to mines in any part of which safety lamps are required to be used.

In this article, the expression “ firedamp content ” has the meaning assigned by the Coal Mines (Ventilation) General Regulations, 1947 (namely, “ percentage of inflammable gas present in the general body of the air ”) ; and the provisions of Regulations 1 to 5 of those regulations shall apply in relation to determinations required under this article, as they apply in relation to determinations under those regulations.

(2) No shot shall be fired in any ventilation district, unless determinations of the firedamp content are regularly being made in that district.

(3) If, on any such determination in any ventilation district, the firedamp content is found to exceed one and one quarter per cent, no shot shall thereafter be fired in that district on the return side of the place where the determination was made, except as provided in paragraph (6).

(4) If the deputy in charge of a deputy's district finds that at any place in an air current the firedamp content exceeds one and one quarter per cent., or any gas cap can be seen on the lowered flame of a safety lamp, he shall forthwith—

(a) ensure that no shot is fired, or shot hole charged, in his district on the return side of that place, except as provided in paragraph (6) ; and

(b) cause notice of the same to be given to the deputy in charge of each deputy's district whereof any part is in the ventilation district concerned and on the return side of the said place.

(5) Each deputy to whom notice is given in pursuance of sub-paragraph (b) of paragraph (4), shall ensure that no shot is fired, or shot hole charged, in any part of his district which is in the same ventilation district as, and on the return side of, the place concerned, except as provided in paragraph (6).

(6) Any prohibition of the charging of shot holes or the firing of shots in places on the return side as mentioned in paragraph (3), (4) or (5) shall continue until, with respect to any place, the senior official on duty at the mine has satisfied himself that the firedamp content in that place has been reduced below one and one quarter per cent., and has authorised the resumption there of shot firing.

(7) Except where an excess of the firedamp content over one and one quarter per cent. was caused by a temporary derangement of the ventilation which has been remedied, the manager shall forthwith give notice to the inspector of the division of any prohibition operating under this article.

Restriction or prohibition on certain shots.

35.—(1) If the face of any stone drift is in a seam of coal more than 12 inches thick, or in any goaf, or is known to have approached within five yards of any such seam or goaf, no shot firer shall in that drift—

(a) use any delay detonator, or

(b) fire any round of more than six shots,

except with the consent in writing of the inspector of the division.

(2) In a mine in any part of which safety lamps are required to be used, or in any part of a mine in which such lamps are being used as a temporary precaution, no shot shall be fired—

(a) in the roof of a longwall working between the coal face and the waste ; or

(b) in any waste.

Precautionary examinations.

36.—(1) This article shall apply only to mines in any part of which safety lamps are required to be used, and to parts of a mine in which such lamps are being used as a temporary precaution.

(2) No shot firer shall fire any shot, unless he has at the places and times specified in this article carried out an examination for general safety, and tests for the presence of inflammable gas. Every such test for gas shall be made with a locked safety lamp of a type approved* for the purpose of deputies' inspections, an approved methanometer, or other apparatus approved for the purpose.

(3) No shot shall be fired, or shot hole charged, if, at any test made with respect to it under this article, the percentage of inflammable gas present is found to exceed one and one quarter per cent. or if any gas cap can be seen on the lowered flame of a safety lamp.

(4) If a succession of shots is to be fired singly in coal along a longwall face, the shot firer concerned shall arrange the shots in groups of not more than six.

Paragraph (5) of this article shall apply to each such group as if it was a round of shots ; and the shot firer shall fire all the shots in any group without interruption for duties other than shot firing.

(5) If shots are to be fired in one or more rounds or groups, the shot firer concerned shall—

(a) before shot firing in an area is begun, carry out an examination for general safety (including tests for gas) over the whole of that area and the approaches thereto ;

* For description of approved types see page 252.

(b) immediately before the first shot hole of any round or group is charged test for gas—

(i) throughout that part of the workings which is between the face and the waste and between the two shot holes of the round or group which are farthest apart ;

(ii) in every accessible place within ten yards of either of those shot holes ; and

(iii) at the mouth of each shot hole ; and

(c) immediately before firing any round, or any shot in a group, test for gas in the vicinity of each shot hole, and at the edge of any waste opposite.

(6) In the case of any other shot, the shot firer shall—

(a) immediately before the shot hole is charged, test for gas at the mouth of the shot hole and carry out an examination for general safety (including tests for gas)—

(i) at the place where the shot is to be fired ; and also

(ii) if the shot hole is in a longwall face but not within 20 yards of the end of it, throughout all accessible places within ten yards from the shot hole, or, otherwise, throughout all accessible places within 20 yards therefrom ; and

(b) immediately before firing, test for gas in the vicinity of the shot hole, and at the edge of any waste opposite.

Preparation and charging of shot holes.

37. Except with the consent of the inspector of the division, no shot hole in coal shall be charged, unless the coal has been holed or sheared to a depth greater than the depth of the shot hole :

Provided that this article shall not apply in any anthracite mine or seam, or in a stone drift crossing a seam of coal.

38.—(1) This article shall apply only to mines in any part of which safety lamps are required to be used, and to parts of a mine in which safety lamps are being used as a temporary precaution.

(2) Any person drilling a shot hole in coal or in a ripping, and finding a break along or across it which exceeds one eighth of an inch in width, shall mark the hole concerned in some distinctive manner.

No hole so marked shall be charged.

(3) No person shall charge any shot hole in coal or in a ripping (being a shot hole to which the foregoing paragraph does not apply), unless he has tested with the break detector provided for the purpose for breaks running along or across it, and has satisfied himself that no such break exceeding one eighth of an inch in width exists.

39.—(1) Every shot hole shall be charged by, and shall be stemmed by or under the supervision of, the shot firer concerned or another person duly appointed to be a shot firer :

Provided that nothing in this paragraph shall restrict any holder of a shot firer's certificate from charging a shot hole under the close personal supervision of the shot firer concerned, if that holder is practising shot firing in the pit for the purpose of qualification under paragraph (4) of Article 12.

(2) No shot hole shall be charged with an aggregate weight or length of explosive exceeding the maximum specified on any cartridge forming part of the charge.

(3) In a mine in any part of which safety lamps are required to be used, or in any part of a mine in which such lamps are being used as a temporary precaution—

(a) no person shall begin to charge any shot hole in under-cut coal, or in a roof ripping within 100 yards of a coal face, unless he has inserted a plug of stemming at the back of the hole ;

(b) no shot hole shall be charged in a roof ripping within 20 yards of the face otherwise than with sheathed explosive.

PART VI.

SHOT FIRING (ADDITIONAL PROVISIONS, SHAFTS AND STAPLE PITS)

Application of Part VI.

40. This part of this order shall apply to all shafts in the course of being sunk, deepened or widened (including any part of a shaft being driven upwards), and to all staple pits.

Explosives and detonators.

41.—(1) No shot shall be fired otherwise than electrically.

(2) No explosive shall be taken into the shaft or pit, unless required for immediate use.

(3) No person other than a shot firer shall take any primer cartridge fitted with a detonator into a shaft.

(4) No such cartridge shall be so taken otherwise than in a thick felt bag, or other receptacle sufficient to protect it from shock.

Precautions before firing.

42.—(1) No shot firer shall couple a shot firing cable to any detonator, unless—

(a) the hoppit is conveniently placed for men in the shaft or pit to enter ; and

(b) the chargeman has been notified that the winder is ready to raise it.

(2) No shot firer shall couple a shot firing cable to shot firing apparatus, unless all persons are in a place of safety.

Precautions after firing.

43.—(1) No person shall enter the shaft or pit after a shot has been fired, until the chargeman (accompanied if necessary by not more than two persons) has ascertained that it is safe for work to be resumed.

(2) Any examination in pursuance of the foregoing paragraph, shall, if inflammable gas has been, or is likely to be, found in the workings, be made with a locked flame safety lamp of a type which will indicate the presence of such gas.

PART VII.

MISS-FIRES.

A. Single shots.

Meaning of " single-shot miss-fire "

44.—(1) For the purposes of this part of this order, all shots fired by fuse shall be deemed to be single shots.

(2) A shot being fired as a single shot shall be treated as a miss-fire (in this order, referred to as a " single-shot miss-fire "), if it fails to explode, in the case of a shot being fired—

(a) by fuse, after the shot firer has withdrawn after once lighting the fuse ; or

(b) electrically, after the shot firer, having attempted unsuccessfully to fire the shot, has followed the procedure prescribed in paragraph (3) of this article.

(3) The said procedure is that the shot firer shall—

(a) disconnect from the shot firing apparatus the removable handle or key and the shot firing cable ;

(b) after waiting five minutes, examine the cable and connections for defects, and remedy the same ;

(c) make a further attempt to fire the shot (for which purpose he may, notwithstanding the provisions of Article 14, use shot firing apparatus of a type approved for multi-shot firing for not more than six shots with the appropriate explosive).

Single-shot miss-fires, general precautions.

45.—(1) In the event of a single-shot miss-fire, no person shall approach the shot hole until, if the shot is being fired—

(a) by fuse, there have elapsed, from the last attempt to fire the shot, not less than 30 minutes ; or

(b) electrically, the removable handle or key and the shot firing cable have been disconnected from the shot firing apparatus, and there have elapsed, from the last attempt to fire the shot, not less than five minutes.

(2) The shot firer concerned shall, if he leaves the working place before Article 46 has been complied with—

(a) cause notice of the miss-fire to be given to the deputy in charge of the district ; and

(b) ensure that sufficient fences and danger notices are erected to notify the miss-fire to any person approaching the place.

Single-shot miss-fires, remedial action.

46.—(1) No person shall attempt to remove any part of the charge from the shot hole of any single-shot miss-fire.

(2) In the event of any such miss-fire, the shot firer concerned shall ensure that either—

(a) the procedure prescribed in paragraph (3) of this article is complied with ; or

(b) the stemming is removed with water or with an approved device, an additional primer inserted in the shot hole with proper stemming, and the shot then duly fired, as provided in this order.

(3) The said procedure is as follows—

(a) a shot hole shall be drilled not nearer to the miss-fire than 12 inches, and, so far as is practicable, parallel to, and of equal depth to, its shot hole ;

(b) if the miss-fire contains a detonator, the leads or fuse thereof shall be attached by a string to the shot firing cable, or to some distinctive marker ;

(c) a shot shall be duly fired in the shot hole aforesaid ;

(d) if the miss-fire is dislodged, a search, under the supervision of the shot firer or of an official of the mine, shall, before any person resumes work, be made for the detonator (if any) and charge thereof, and, if any detonator or cartridge is not found, all stone or mineral so dislodged shall, under supervision as aforesaid, be conveyed out of the mine separately from any other stone or mineral ;

(e) if the miss-fire is not dislodged, the procedure herein prescribed shall be repeated.

B. Shots in a round.

Circuit not continuous.

47.—(1) If, when the circuit of a round is tested in pursuance of paragraph (11) of Article 25, it is found not to be continuous, the shot firer shall—

(a) comply with the following procedure, that is to say—

(i) examine the shot firing cable and connections for defects (after disconnecting the cable from the shot firing apparatus, if the testing device formed part of it) ;

(ii) remedy any defect so found ; and

(iii) subject to the provisions of the said paragraph (11), test the circuit again for continuity ; and

(b) if he leaves the working place before the said test is completed, take action as prescribed in paragraph (2) of Article 45.

(2) If the test aforesaid is successful, the provisions of this part of this order shall not apply further in relation to that round, unless one or more of the shots fails to explode when fired

(3) If the said test is unsuccessful, the shot firer shall, by individual tests for continuity (which shall be subject to the provisions of paragraph (11) of Article 25), determine the faulty shot or shots.

Meaning of "miss-fire in a round", etc., and general provisions

48.—(1) A shot being fired in a round shall be treated as a miss-fire (in this order referred to as a "miss-fire in a round"), if—

(a) by the individual tests under paragraph (3) of Article 47, it is found to be a faulty shot (any such shot being, in this order, referred to as a "miss-fire in a round by broken continuity");

or

(b) when the round is fired, it fails to explode (whether or not all other shots in the round have exploded) (any such shot being, in this order, referred to as a "miss-fire in a round after firing").

(2) In the event of any miss-fire in a round—

(a) no person shall attempt to remove any part of the charge from the shot hole;

(b) the shot firer concerned shall, if he leaves the working place before the remedial action specified in Article 49 or 50, as the case may be, has been completed, take action as prescribed in paragraph (2) of Article 45.

(3) Whenever, in the event of any miss-fire in a round, any shot forming part of the round is, for the purposes of remedial action under Article 49 or 50 required to be fired singly, it may, notwithstanding the provisions of Article 14, be fired by means of the shot firing apparatus used for firing the round.

Remedial action.

49.—(1) In the event of a miss-fire in a round by broken continuity, the shot firer concerned shall ensure that either—

(a) the procedure prescribed in paragraph (2) of this article is complied with; or

(b) the stemming is removed with water or with an approved device, an additional primer inserted in the shot hole with proper stemming, and the round duly connected up, tested and fired, as provided in this order.

(2) The said procedure is as follows—

(a) the leads of the detonator of the miss-fire shall be attached by a string to the shot firing cable, or to some distinctive marker;

(b) the other shots in the round (excluding, where delay detonators are being used, any shot having a higher period of delay) shall be duly connected up, tested and fired, as provided in this order;

(c) if it has been dislodged, the provisions of sub-paragraph (d) of paragraph (3) of Article 46 shall apply to the recovery and disposal of the detonator and charge ; and any shots having a higher period of delay shall thereafter be duly connected up, tested and fired ;

(d) if it has not been dislodged—

(i) if there were any shots having a higher period of delay, they shall be fired in turn, in ascending order of delay (in each delay period, the shot which is nearest to the miss-fire being fired first), so however that, if it is dislodged before all such shots have been fired, the provisions of sub-paragraph (c) of this paragraph shall then apply ; and

(ii) in any other case, it shall be treated as a single-shot miss-fire.

50.—(1) In the event of a miss-fire in a round after firing—

(a) no person shall approach the shot hole unless the removable handle or key and the shot firing cable have been disconnected from the shot firing apparatus ; and

(b) the shot firer concerned shall at the expiry of the period specified in Article 30 make a personal examination as provided in that article, whether or not any shot in the round has exploded.

(2) If there was more than one miss-fire, the shot firer shall connect them in series and fire them as a round as provided in this order.

(3) If there was one miss-fire only, or if one or more miss-fires, fired as a round in pursuance of paragraph (2), fails or fail to explode, the shot firer shall fire it, or each of them, as the case may be, singly.

(4) Any miss-fire, fired singly as aforesaid and failing to explode, shall be treated as a single-shot miss-fire.

51.—(1) Whenever, in pursuance of this part of this order, in relation to any round of shots, any shot in the round is fired while one or more shots already charged remain unexploded, the shot firer concerned shall, in the course of his examination made in pursuance of Article 30, ascertain whether any such shot has been dislodged.

(2) The provisions of sub-paragraph (d) of paragraph (3) of Article 46 shall apply to the recovery and disposal of the detonator and charge of any shot so dislodged.

C. All miss-fires.

Miss-fires to be reported.

52. In the event of any miss-fire, the shot firer shall, before leaving the mine, report the circumstances thereof to the senior official on duty at the mine, and shall record the fact of the miss-fire in his daily record of shots.

PART VIII.

GENERAL.

Copies of the order.

53.—(1) A copy of this order* shall be kept posted at or near every mine, in some conspicuous place where it may conveniently be seen by persons employed at the mine.

(2) A copy of this order shall be supplied to each shot firer.

Exemptions.

54.—(1) The Chief Inspector of Mines, or a deputy chief inspector on his behalf, may exempt any mine or part of a mine, or any class or description of mines, from the application of any provision of this order, in any case where he is satisfied that compliance therewith is not reasonably practicable, or not requisite in the interests of safety.

(2) The provisions of Section 119 of the Act shall apply in relation to any exemption granted under this order, as they apply in relation to an exemption granted under that section by the inspector of the division.

Interpretation.

55.—(1) In this order, unless the context requires otherwise, the following expressions have the meanings hereby assigned to them respectively—

“ approved ” means approved by the Minister ;

“ coal transport road ” means any road which is, or during the last previous six months has been, used for moving coal by mechanical power or gravity, and includes any place within ten yards of the road other than (in the case of a road leading to the face of a seam) the roadhead ;

“ detonator ” includes safety fuse capped with a detonator ;

“ explosive ” does not in the provisions contained in this order include a detonator ;

“ face ” means the exposed surface from which mineral or stone is worked ;

“ firedamp content ” has the meaning assigned by paragraph (1) of Article 34 ;

“ miss-fire in a round ”, “ miss-fire in a round by broken continuity ” and “ miss-fire in a round after firing ” have the meanings respectively assigned by paragraph (1) of Article 48.

“ permitted explosive ” means an explosive of a type and description approved for use in places hazardous by reason of the presence or possibility of inflammable gas, or of combustible dust ;

* The official edition printed in poster form is M. & Q. Form No. 34.

“ prescribed ” means prescribed by the Minister ;

“ road ” means any part, not within ten yards of the face, of a passage maintained in connection with the working of the mine ;

“ roadhead ” means a space at the end of a road leading to the face of a seam, the space being equal in width to the width of the road at the end nearest to the face and extending from that end to the face ;

“ round ”, in relation to shots, means (subject to the provisions of paragraph (1) of Article 44) a number of shots fired—

(a) electrically in series, either simultaneously or by means of delay detonators ;

(b) by fuse, by means of an apparatus approved for firing a number of shots by fuse simultaneously ; or

(c) where the number does not exceed four, by fuses lighted at the same time ;

“ safety fuse ” means a fuse consisting of gun powder protected either by not less than three coverings of thread or by not less than two coverings of thread and one of tape or gutta-percha, being of such a quality that the rate of burning does not vary more than ten seconds above or below the rate of 90 seconds for each yard of fuse ;

“ scheme of transit ” has the meaning assigned by paragraph (1) of Article 8 ;

“ sheathed explosive ” means explosive covered by an external sheath of incombustible material spread evenly over the sides of the cartridge, and includes explosive in any type of cartridge certified by the Minister to be equivalent in safety to sheathed explosive ;

“ shot-firer ” has the meaning assigned by paragraph (1) of Article 11 ;

“ single-shot miss-fire ” has the meaning assigned by paragraph (2) of Article 44.

FIRST SCHEDULE

Art. 1 (2)

Apparatus and explosives for horse killing.

1. No apparatus or cartridge of explosive of a type approved* for use in mines for destroying horses shall be taken or used below ground for any other purpose.

2. Any such apparatus shall be—

* The Exit Humane Horse Killer, submitted by N. J. Muschamp & Company, Grove Street Works, Mansfield Woodhouse (Ammunition : Kynoch's-320 blank loaded with either 4 or 5 grains of black powder) has been approved, subject to its being used only with this ammunition.

(a) kept in the custody of a competent person, appointed for the purpose by the manager in writing, and used only by him or under his immediate supervision ;

(b) cleaned and examined immediately after use ; and

(c) maintained in efficient and safe working order.

3. Any such cartridge shall be—

(a) stored at a place appointed by the manager as a store for, or as premises for the keeping of, explosives, in the charge of the person appointed to have charge of that place ;

(b) issued only to a person appointed to have custody of an apparatus to which this schedule applies ;

(c) kept after issue in a case or box, provided by the owner, which contains no other type of explosive, and is kept locked and separated from any other case or box containing explosives or detonators ; and

(d) removed from the said case or box only when required for immediate use, or for return to store.

4. In a mine in any part of which safety lamps are required to be used, or in any part of a mine in which such lamps are being used as a temporary precaution, no shot shall be fired with any such apparatus, unless, immediately before firing, the person having custody of it, or a shot firer, deputy or superior official of the mine, has made tests for gas throughout all accessible places within ten yards of the place where the shot is to be fired, and satisfied himself that it is safe to fire the shot.

5. Any test for gas under the foregoing paragraph shall be made with a locked safety lamp of a type approved for deputies' inspections, an approved methanometer, or other apparatus approved for the purpose ; and, if, on any such test, the percentage of inflammable gas present is found to exceed one and one quarter per cent., or if any gas cap can be seen on the lowered flame of a safety lamp, it shall not be regarded as safe to fire a shot.

SECOND SCHEDULE.

Art. 8 (2)

Matters to be covered by a scheme of transit.

1. Reserve stations, location, construction and marking.
2. Explosives, carriage, design and construction.
3. Explosives, supervision in transit and at reserve stations (including custody of keys).
4. Explosives, precautions during transit.
5. Explosives, provision (if any) for conveyance in bulk to the working face.
6. Explosives, maximum quantities to be held at reserve stations.
7. Explosives, control of issues from reserve stations
8. Explosives, requirements for return to reserve stations.

THIRD SCHEDULE.

Art. 15 (2)

Test for electric multi-shot shot firing apparatus.

Apparatus and equipment required

1. A fuse head testing set comprising—

(a) twelve (or, if the apparatus to be tested is of a type approved for firing not more than six shots, six) metal clips (each arm of each clip being insulated from the other), designed to hold “Testex” low tension fuse heads in a vertical position ;

(b) two metal clips designed to hold a length of wire horizontally above and close to, or touching, the fuse heads when in position in their clips ;

(c) a non-inductive resistor, such that the total resistance of the set is equivalent to that of a shot firing circuit containing the maximum number of detonators which the apparatus to be tested is designed to fire ;

(d) connections joining the fuse head clips in series with the horizontal wire and the resistor to two terminals suitable for connection to the apparatus to be tested.

2. “Testex” low tension fuse heads, as necessary.

3. Fine wire of material and diameter such that it will rupture when carrying the current necessary to fire the maximum number of detonators which the apparatus to be tested is designed to fire.

Method of test.

1. Fuse heads to the full capacity of the set must be placed in position in the fuse head clips, and a length of the appropriate fine wire stretched horizontally on the clips above them.

2. The apparatus to be tested must be connected to the terminals of the set, and a test of the continuity of the circuit made.

3. The apparatus must then be operated by using the removable handle or key.

The test.

The apparatus is not in satisfactory order unless, when the removable handle or key is used, all the fuse heads in the set are fired and the fine wire ruptured.

Coal Mines (Cardox and Hydrox) Order, 1941, No. 513.

[*Made under Section 61 of the Coal Mines Act, 1911.*]

(*As amended by the Coal Mines (Cardox and Hydrox) Order, 1945, No. 1468.*)

This order regulates the supply, use and storage of Cardox Carbon Dioxide Cartridges and Hydrox Steel Tube Cartridges, hereinafter referred to collectively as “the cartridges”. Certain provisions of the order are no longer in line with the corresponding provisions relating to the use of explosives (now contained in the Coal Mines (Explosives) Order, 1951), and a revision is under consideration.

1.—In all mines to which the Coal Mines Act, 1911, applies, the use of the cartridges shall be governed by this order and not by any order made under that Act applying to the use of blasting explosives.

2.—The cartridges shall be of types permitted by the Minister for the purpose of this order and shall be in conformity with specifications prescribed by the Minister.

3.—(a) The charging and priming of the cartridges shall be carried out on the surface in a suitable building or room separated from accommodation used for other purposes. In this building or room no inflammable materials other than those required for charging and priming and no smoking shall be allowed, and adequate means for extinguishing fire shall be provided.

(b) A notice shall be kept posted up in the charging room stating the prescribed weight of charge and type of heater, igniter or initiator for each type of cartridge in use, and no cartridge shall be charged or primed otherwise than in accordance with this notice.

4.—(a) Adequate means shall be employed to prevent cartridges from falling out of the cage while being lowered or raised in the shaft, and they shall be transported below ground only in tubs marked distinctively to indicate their contents, and used for the time being solely for that purpose.

(b) The number of cartridges which are taken or allowed to be below ground at one time shall not exceed the number estimated to be required for use in the next firing shift. If any cartridges remain unused at the end of the shift, they may be stored below ground until the next firing shift, provided that they are stored in a suitable place specified by the manager.

5.—The cartridges shall only be fired by a competent person authorised in writing by the manager for the purpose.

6.—(a) Every cartridge shall be placed in a properly drilled and placed hole.

(b) The hole shall allow sufficient clearance to permit of the cartridge being inserted without using undue force.

(c) The manager shall prescribe, and the person firing the cartridge shall take appropriate measures to ensure that no cartridge shall be ejected from the hole in a dangerous manner on firing.

7.—(a) No cartridge shall be fired except by means of an efficient electrical firing apparatus which shall be so constructed and used—

(i) that it can only be operated by a removable handle or plug which shall not be placed in position until a cartridge is about to be fired, shall be removed as soon as a cartridge has been fired, and shall be kept in the personal custody of the person firing the cartridges at all times when he is on duty; and

(ii) that the firing circuit is made and broken either automatically or by means of a push button switch.

(b) Once at least in every three months every electrical firing

apparatus in use shall be cleaned and thoroughly overhauled either by the maker of the apparatus or by a competent person appointed in writing by the manager.

(c) No person shall knowingly use or allow to be used any firing apparatus which has become unsafe or defective, and no unauthorised person shall open or interfere with any electrical firing apparatus.

8.—(a) The person firing a cartridge shall not use, for the purpose of firing, a cable which is less than 20 yards in length. He shall himself couple up the cable to the cartridge and shall do so before coupling the cable to the firing apparatus. He shall take care to prevent the cable coming into contact with any power or lighting cables. He shall also himself couple the cable to the firing apparatus.

(b) The person firing the cartridge shall, before doing so, see that all persons in the vicinity have taken proper shelter, and he shall also take suitable steps to prevent any person approaching the cartridge. He shall himself take proper shelter. If he has reason to believe that there is a possibility of the cartridge blowing through into an adjoining place, he shall send verbal warning to the persons in that adjoining place to take proper shelter.

9.—The person firing the cartridge shall, after it has been fired, make a careful examination of the place and see that it is safe in all respects.

10.—If the priming charge in the cartridge misses fire—

(a) the person firing the cartridge shall not himself approach or allow any other person to approach nor shall any person knowingly approach the hole or attempt to extract the cartridge from the hole until an interval has elapsed of not less than ten minutes ;

(b) before approaching or allowing anyone to approach the hole the person firing the cartridge shall disconnect the cable and the removable handle or plug from the firing apparatus and shall examine the cable and connections for any defect ;

(c) if before the interval of ten minutes has elapsed the person firing the cartridge has occasion to leave the place, he shall fence off the place before leaving and attach to each fence a danger board indicating the presence of a miss-fired cartridge.

11.—Except in a case in which a cartridge is used in an emergency for fire-fighting, no person shall use any cartridge, heater, igniter or initiator in any other way than in accordance with the provisions of this order.

12.—In any mine or part of a mine in which no explosive other than a permitted explosive is allowed to be used—

(a) the cartridges shall be fired only by an authorised person possessing the qualifications prescribed for shot firers ;

(b) every such authorised person shall keep a daily record (in a book which shall be kept at the mine for the purpose in accordance with the provisions of Section 24 of the Act) of the cartridges fired by him ;

(c) no cartridge shall be fired except by means of the electrical firing apparatus which shall be of a type for the time being approved by the Minister ;

(d) except with the permission in writing of the inspector of the division, no cartridge shall be fired in coal unless the coal has been holed to a depth greater than the depth of the hole ;

(e) no cartridge shall be fired unless, immediately before it is to be fired, the authorised person has examined the place where it is to be fired and all contiguous accessible places within a radius of 20 yards from the place, and has found them clear of inflammable gas and in all respects safe for firing. The examination shall be made by means of a flame safety lamp, with which may be used an electric safety lamp, each lamp (except in small mines) to be of a type approved for that purpose ; or by means of any other apparatus that may be approved by the Minister for the purpose :

Provided that the requirements of this sub-clause shall not apply to mines in which inflammable gas is unknown.

(f) Two or more cartridges, but not more than six in all, may be fired simultaneously, provided that they are fired electrically in series by means of an apparatus of a type for the time being approved by the Minister for that purpose.

13.—A copy of this order shall be supplied to every person authorised under Clause 5 or Clause 12 (a), and a copy shall also be kept posted up in some conspicuous place at or near the mine where it may be conveniently read or seen by the persons employed.

FIRE DAMP DETECTORS.

Coal Mines General Regulations (Firedamp Detectors), 1939, No. 322.

(As amended by the Coal Mines (Lighting and Contraband) General Regulations, 1949, No. 924.)

1.—(a) In every seam or part of a seam in which safety lamps are required by the Act or the regulations of the mine to be used at the working faces, appliances for detecting the presence of inflammable gas (hereinafter called “ detectors ”) shall be provided by the owner of the mine and used by the workmen employed.

(b) Every detector shall be of a type approved for the purpose by the Minister and the approval shall be subject to such conditions as the Minister may prescribe.

2.—At least one detector shall be provided as follows—

(a) in longwall workings, on each face for every eight or fraction of eight of the total number of workmen wholly or mainly employed at the face during the shift ;

(b) in other workings, in each working place at the face ;

(c) in every cross-measure drift or heading in stone ;

(d) in the return airways at every place where a man or set of men is engaged on repair work ;

(e) in conjunction with each electrical motor in operation at, or within 100 yards of, the working face.

3.—In any seam where the air current in the return airway from any ventilating district in the seam is found to contain more than one half per cent. of inflammable gas on the average of six samples of air taken by an inspector from the air current at intervals of not less than a fortnight—

(a) the detector provided in conjunction with any electrical motor in operation at the working face shall be a detector of automatic type (hereinafter called “ automatic detector ”) ;

(b) at times when electric power is being used at any longwall face there shall be provided at that face at least one automatic detector, in addition to any automatic detector required under paragraph (a), out of every eight of all the detectors required to be provided, unless the manager has, within the preceding 12 months, proved, by means of at least six samples of air taken in the air current in the return airway from that face at intervals of not less than a fortnight or otherwise to the satisfaction of the inspector of the division, that the air current in that return airway normally contains not more than one-half per cent. of inflammable gas at a place within 50 yards of the working face :

Provided that nothing in this paragraph shall be deemed to require the provision on any shift of more than two automatic detectors on any single-unit conveyor face, nor more than four on any double-unit conveyor face, including automatic detectors provided in conjunction with electrical motors ; and

(c) where broken working is being carried on immediately adjoining the goaf as part of the bord and pillar or similar system of working, one out of every four of the detectors required to be provided in such broken workings shall be an automatic detector, but at least one automatic detector shall be provided in such broken workings at all times while work is being carried on.

4.—The manager shall—

(a) appoint a sufficient number of competent workmen (as hereinafter defined) and ensure to the best of his power that

each of the detectors required to be provided is in the personal charge of, and is properly used by, a competent workman :

Provided that no breach of this requirement shall be deemed to have arisen in consequence of failure to appoint a sufficient number of competent workmen if the manager proves that he has made the necessary arrangements for their training and reasonable efforts to induce the workers to take it up, and that the failure was due to causes over which he had no control ;

(b) where flame safety lamps are provided as detectors, ensure that no workman provided with such a detector shall be provided with any other lamp except with the written permission of the manager ; and

(c) where detectors of non-automatic type are provided, give directions to the competent workmen as to the minimum number of tests to be made daily.

5.—(a) It shall be the duty of every workman appointed under No. 4 of these regulations to use the detector in accordance with the directions given to him by the manager, under-manager or other official of the mine ; and where he is provided with a flame safety lamp as a detector he shall not, except with the written permission of the manager, use any other lamp as his working light.

(b) If a workman detects the presence of inflammable gas at any place where an electrical motor is in operation, he shall inform the person appointed to work the motor who shall cut off the power therefrom.

6.—For the purposes of these regulations a competent workman is a workman who has been instructed in the method of using and is competent to use the type of detector with which he is provided.

If the detector is a flame safety lamp the competency of the workman to use it shall be tested (and thereafter certified in writing in the form prescribed by the Minister) by requiring him to show his ability to detect the presence of firedamp by recognising actual gas caps as they appear on the lowered flame of the type of safety lamp which he is to use as a detector.

In respect of any other type of detector the competency of the workman shall be tested and certified in such manner, if any, as the conditions of approval of that type of detector by the Minister may stipulate.

7.—The provisions of Section 34 of the Act (examination of safety lamps) shall apply to detectors provided under these regulations and such provisions shall have effect as if incorporated in these regulations.

8.—Nothing in these regulations shall detract from any of the requirements of Sections 64 and 65 of the Act in regard to the inspection to be made by the deputies of a mine before the commencement of

work in a shift and in the course of each shift, nor from any of the provisions of the Explosives in Coal Mines Order, 1934, in regard to examinations for inflammable gas.

FIRE-FIGHTING.

Coal Mines General Regulations, 1938, No. 797.

PART I.

1.—(a) In every mine, other than small mines which are naturally wet throughout and mines of stratified ironstone, there shall be kept, ready for immediate use, at appropriate places in relation to each working face and along the main roads, a sufficient supply of suitable dust or sand and of portable fire-extinguishers, except in so far as water is provided at these places with equipment to serve the same purpose.

(b) At each place where dust, sand, or water is so kept, means shall be provided for readily conveying the material by hand and for using it for fire-fighting.

(c) At all times when a coal-cutting machine is in operation at any working face in which an ignition of inflammable gas has been, or, having regard to the nature of the strata, is liable to be, produced in the cut by its operation, effective means to prevent such ignition shall be provided on the machine; or a supply of suitable dust or sand in a proper container, or a portable fire-extinguisher shall either be carried on the machine, or, if that is impracticable owing to the thinness of the seam, shall be kept at suitable intervals along the working face and at the roadhead at the intake end of the working face.

(d) Fire-extinguishers shall be examined and discharged and refilled as often as may be necessary to ensure that they are kept in good working order.

(e) Fire-extinguishers which are liable, when operated, to give off poisonous or noxious fumes shall not be provided or used underground.

2.—At every mine at which 100 or more persons are employed underground there shall also be provided and kept ready for immediate use—

(a) a supply of water sufficient for the purpose of fighting fires underground; and

(b) efficient means for conveying the water and delivering it promptly at adequate pressure and in adequate volume to all parts of the mine in ordinary use for working or travelling where fire is liable to occur.

Except in so far as provision is made so to deliver the water through pipelines and hose extensions, it shall be so delivered

from water tanks or barrels by portable manual force pumps and all equipment necessary for this purpose shall be provided and kept constantly ready for use :

Provided that the inspector of the division may exempt from any requirement of paragraph (b) of this regulation any mine, or part of a mine, in respect of which he is satisfied that it is not reasonably practicable for the owner to comply with the requirement.

3.—Once every month all the equipment and material provided for fire-fighting shall be examined by a competent person appointed for that purpose who shall report in writing to the manager of the mine and shall specify in the report anything that he considers to be defective or lacking.

4.—The manager of every mine to which No. 2 of these regulations applies shall adopt and enforce rules for the organisation and conduct of fire-fighting work and of fire-drills.

(The provisions of Part II of these regulations have been revoked ; Part III relates to Telephones and Signalling Apparatus—see page 163.)

FIRST AID (SECTION 85).

Coal Mines General Regulations (First Aid), 1930, No. 91.

(As amended by the Coal Mines (First Aid) Amending Regulations, 1937, No. 548.)

1.—At every mine adequate arrangements shall be made in the manner hereinafter provided for rendering first-aid treatment to any person in or about the mine who may be injured or be taken ill.

PART I.

SURFACE ORGANISATION.

2.—At every mine where the total number of persons employed in any one shift exceeds 100 there shall be provided and maintained in good order a suitable first-aid room.

3.—The first-aid room shall be a room of easy approach separated from accommodation used for other purposes, and it shall be used only for first-aid and ambulance work. It shall be situated on the surface conveniently near the entrance to the mine, and shall have a floor space of not less than 100 square feet and shall be adequately heated and lighted and kept clean. It shall be distinguished by the words " First Aid " painted on the door.

4.—The first-aid room shall be adequately equipped and shall contain at least the equipment prescribed in the first schedule to these regulations.

5.—The first-aid room shall be placed under the charge of a competent person or persons appointed in writing by the manager. No person other than a qualified nurse or doctor, shall be appointed unless

he is the holder of a certificate of proficiency in first aid, from a society or body approved by the Minister.* The person or persons in charge shall always be readily available during working hours. The person or persons in charge shall keep a record of all cases treated at the first-aid room, and this record shall show at least the following information—the name of the person treated, the time and date of treatment, the nature of the injury or sickness and the name of the person by whom it was treated.

6.—At every mine where the total number of persons employed in any one shift does not exceed 100, and where a first-aid room is not provided, there shall be provided and kept constantly available for use a suitable place, under shelter, at the surface of the mine, where sick and injured persons can receive first-aid treatment and, when necessary, be protected from exposure until they can be removed in an ambulance. In this shelter, or in some other place in or about the mine, if more convenient, there shall be provided and maintained in good order the equipment prescribed in the second schedule to these regulations.

These arrangements shall be placed in charge of a responsible person or persons appointed in writing by the manager. The person or persons in charge shall always be readily available during working hours.

PART II.

UNDERGROUND ORGANISATION.

7.—A sufficient number of the persons employed underground shall be men holding certificates of proficiency in first aid from a society or body approved by the Minister.* So far as practicable each of these men shall be included among a group of persons regularly working in the same part of the mine and known to them as a first-aid man. The number of first-aid men shall be not less than one in respect of 50 persons employed at any one time in any deputy's district, and not less than in the proportion of one to every 30 persons employed elsewhere underground.

A list of the first-aid men employed underground shall be kept posted up in the first-aid room or elsewhere at the surface of the mine.

8.—(a) Dressings and antiseptic for use therewith underground shall be provided by the owner and distributed in one or both of the following ways or in such other way as the Minister may approve—

(i) Each person employed underground shall carry with him a first-aid outfit consisting of one large sterilized dressing, one small sterilized dressing and an ampoule of tincture of iodine (two per cent. alcoholic solution) or other antiseptic approved by the Minister. This outfit shall be securely packed to protect it against damage, dirt and wet ;

* For list of approved societies and other bodies *see* page 237.

(ii) Each first-aid man employed underground in pursuance of Regulation 7 shall be provided with, and shall keep readily available underground, a first-aid box containing the articles prescribed in the third schedule to these regulations.

(b) Every first-aid outfit and first-aid box provided in pursuance of this regulation shall be taken to the surface at the end of the shift by the person in charge of it and shall there be examined and, when necessary, replenished by the person in charge of the first-aid room, or other competent person appointed in writing by the manager.

9.—(a) The following equipment shall be provided by the owner and maintained at convenient places underground throughout the mine, to be known as first-aid stations—

(i) Suitable stretchers. (Stretchers kept in wet or damp places shall be constructed of rot-proof or rust-proof materials).

(ii) Sets of splints ($4\frac{1}{2}$ feet, 3 feet, and 1 foot) and kept with them the necessary triangular bandages for applying them ;

(iii) A tourniquet ;

(iv) A sufficient supply of sterilized burn dressings (where first-aid outfits are relied upon exclusively).

{ To be kept in suitable boxes marked* with the words "First Aid".

(b) It shall be the duty of the first-aid men employed underground to see that the equipment specified in this regulation is kept in good order, and that it is replenished when necessary.

10.—The foregoing Regulations, 7, 8 and 9, shall not apply (a) to sinking pits, or (b) to mines where the total number of persons employed underground is less than 30, unless, in the opinion of the inspector of the division, the surface organisation and equipment are not sufficient in themselves to ensure prompt first-aid treatment underground, owing to the distance of the workings from the shaft or for other reasons.

PART III.

TRANSPORT FOR CASES OF ACCIDENT AND SICKNESS.

11.—The following further provision shall be made for the removal of serious cases of accident or sickness from the mine—

(a) The owner of every mine shall make such arrangements as will provide an effective motor ambulance service which shall be used whenever necessary for the transport of sick and

* Boxes provided before 14 June, 1937, may continue to be marked with a white cross on a red ground.

injured workers to hospital or to their homes. The service shall be so organised that a sufficient number of motor ambulances kept at all times in constant readiness and with a driver readily available shall be stationed at a base not more than ten miles by road from the mine and, if the total number of persons employed underground exceeds ten, in telephonic communication with the mine. If any question arises whether the number of motor ambulances stationed at any base is sufficient that question shall be decided by the Minister, but if the owner disputes the reasonableness of the decision, the matter shall be settled in manner provided by the Act for settling disputes. Provided that, in respect of mines where it is not reasonably practicable for the owner to comply with these requirements, the inspector of the division may sanction arrangements for the use of a motor ambulance stationed more than ten miles by road from the mine, and for summoning it otherwise than by telephone, or he may sanction such other not less effective arrangements as the owner may be able to make in the circumstances.

(b) At every shaft in which injured persons are raised and where the cage is not large enough to permit of a stretcher being laid flat, and at every shaft where persons are raised otherwise than in a cage, and at every sinking pit, there shall be provided and used a suitable jacket or attachment to minimise discomfort and prevent aggravation of an injury.

PART IV.

GENERAL.

12.—The manager of every mine or some other qualified person appointed by him in writing shall inspect, at intervals not exceeding six months, the accommodation, equipment and material provided at the mine, and the working of the organisation at the mine, for first-aid and ambulance work ; and if on such inspection anything is found to be defective or lacking, it shall be remedied without delay.

13.—No breach of Regulation No. 7 shall be deemed to have arisen in consequence of failure to ensure that an adequate number of men are trained in first aid if the owner of the mine proves that he has made the necessary arrangements for training and reasonable efforts to induce the workers to take it up, and that the failure was due to causes over which he had no control.

14.—No person shall misuse, or, without authority, interfere with any appliance, equipment or material provided in pursuance of these regulations.

If material is lost from, or damage occurs to, a first-aid outfit or portable first-aid box, the loss or damage shall be deemed to have been due to the default or neglect of the person in charge of it unless he proves that the loss or damage was due to no fault of his own and that he immediately gave notice of it to some responsible official.

15.—All materials for dressings provided in pursuance of these regulations shall be those designated in, and of a grade or quality not lower than the standards prescribed by the current British Pharmaceutical Codex.*

FIRST SCHEDULE.

Equipment of First-Aid Room (Regulation 4).

- (a) A stretcher and a table of convenient height (about 2½ feet), large enough to stand the stretcher on;
- (b) a bench or chairs;
- (c) a glazed sink with cold water and hot water readily available;
- (d) soap, towels and a nail-brush;
- (e) a supply of suitable sterilized dressings,* bandages and adhesive plaster,
- (f) a supply of tincture of iodine (two per cent. alcoholic solution) or other antiseptic approved by the Minister, and of picric acid (one per cent. aqueous solution), a bottle of eyedrops (No. 1);
- (g) blankets and hot-water bottles;
- (h) sets of splints (4½ feet, 3 feet and 1 foot) with the necessary triangular bandages for applying them, together with a supply of splint padding;
- (i) a supply of drinking water and a bottle of meat extract, coffee extract or other stimulant, and a drinking vessel;
- (j) a tourniquet, scissors, camel-hair brushes and safety-pins.

SECOND SCHEDULE.

Equipment at mines where a first-aid room is not provided (Regulation 6).

- 1. A stretcher (with blankets and hot-water bottles).
- 2. Sets of splints (4½ feet, 3 feet and 1 foot) with the necessary triangular bandages for applying them, together with a supply of splint padding.
- 3. A first-aid box containing at least—
 - (a) a copy of the First-Aid Leaflet issued by the Ministry of Fuel and Power (M. & Q. Form No. 99);
 - (b) a sufficient supply of large and small sterilized dressings*;
 - (c) a sufficient supply of sterilized burn dressings*;
 - (d) a sufficient supply of sterilized cotton wool in ½-oz. packets; and of adhesive plaster;
 - (e) a supply of roller bandages;
 - (f) a supply of tincture of iodine (two per cent. alcoholic solution) or other antiseptic approved by the Minister;
 - (g) a bottle of meat extract, coffee extract or other stimulant, and a drinking vessel;
 - (h) a bottle of eyedrops (No. 1);
 - (i) a tourniquet, scissors and safety-pins.

Each first-aid box shall be marked with the words "First-Aid"; and nothing except appliances or requisites for first aid shall be kept in it.†

THIRD SCHEDULE.

Prescription of first-aid box for use underground (Regulation 8 (a) (ii).).

The first-aid box shall contain at least—

- (a) a sufficient number (not less than three) of large sterilized dressings*;
- (b) a sufficient number (not less than six) of small sterilized dressings*;
- (c) a sufficient number of large sterilized burn dressings*;
- (d) a sufficient number (not less than three) of ampoules of iodine (two per cent. alcoholic solution) or other antiseptic approved by the Minister.

Each box shall be marked with the words "First Aid"; and nothing except appliances or requisites for first aid shall be kept in it.†

* The B.P.C. Standard dressings corresponding to the requirements of these regulations are: "Sterilized dressings"—B.P.C., Nos. 13, 14 and 15: small, medium and large plain wound dressings. "Sterilized burn dressings"—B.P.C., Nos. 11 and 12: medium and large burn dressings.

† See note * on page 108.

GANISTER WORKINGS.

General Regulations, 1920, No. 783

The following regulations apply to all mines under the Act in which ganister or other stone containing not less than 80 per cent. of silica (SiO_2) is worked with a view to sale or manufacture :

Provided that if the Chief Inspector of Mines is satisfied in respect of any mine that, owing to the special conditions of the mine or otherwise, any of the requirements of these regulations can be suspended or relaxed without danger to the health of the persons employed, he may by certificate in writing authorise such suspension or relaxation on such conditions and for such period as he may think fit. Any such certificate may be revoked at any time.

In these regulations, "stone" means ganister or other stone containing not less than 80 per cent. of silica (SiO_2).

1.—(a) No person shall use or cause or allow to be used in the mine any rock drill worked by mechanical power unless a jet of water is directed on to the cutting edge of the drill during the whole time the drill is at work, or unless other means equally efficient approved by the Chief Inspector of Mines is provided and used so as to prevent the escape of dust into the air.

(b) If drilling is done by manual labour, a stream of water shall be continually directed on to the cutting edge of the drill during the whole time drilling is being done by means of a hose or syphon, or other means equally efficient approved by the Chief Inspector of Mines, so as to prevent the escape of dust into the air.

2.—Unless an efficient waterblast or other means equally efficient approved by the Chief Inspector of Mines is used to the satisfaction of the inspector of the division for allaying the dust after blasting—

No person except for the purpose of making any examination required by the said Act or by any order or regulation under the Act shall work or pass in any place in which a shot has been fired or in any place on the return side thereof during the shift in which the shot was fired, nor until at least four hours have elapsed from the firing of the shot.

Where a waterblast is used, no person shall enter the place in which the shot has been fired until at least half an hour or such shorter period as the Chief Inspector of Mines may after experiment approve, has elapsed from the firing of the shot. A notice of any period so approved shall be kept posted in a conspicuous position at the surface of the mine.

3.—No person shall take down any stone from the face by means of a wedge, lever, or similar appliance unless every part of the surface of the stone, including every break therein, has been effectively watered naturally or otherwise so as to prevent the escape of dust into the air.

4.—Stone shall not be broken up below ground except so far as may be necessary to allow it to be loaded into the tub.

During the process of breaking up any stone below ground, either the part of the stone where the hammer or other tool is to be applied shall be completely covered with wet brattice cloth so as to prevent the escape of dust into the air, or suitable respirators shall be used by the workers. In the latter case each worker shall be supplied with a respirator for his sole use, and all respirators, when required for use, shall be washed or renewed at least once every day.

5.—No person shall, in any part of the mine below ground, remove or cause or allow to be removed any stone, if dry and dusty, unless it has been effectively watered so as to prevent the escape of dust into the air during removal.

6.—Efficient mechanical or other means shall be installed to maintain a constant and adequate ventilating current throughout the mine.

7.—In every case where a working place has advanced more than 15 feet in front of the air, and in every other case where necessary, brattice or air-pipes of non-inflammable material shall be carried up to within such distance, in no case more than 15 feet, from the face as may be necessary to ensure an adequate amount of air reaching the face.

8.—Efficient means of exhaust ventilation or an efficient watering or other arrangement shall be provided and kept provided in connection with every stone breaking machine used at the mine to prevent the escape of dust into the air, and no person shall work, or cause or allow to be worked, any such machine unless such arrangement or means is provided and effectively used.

9.—Notices calling attention to the danger arising to the health of the workers from the practice of spitting shall be kept affixed in conspicuous positions at the mine where they may be easily read by the persons employed.

10.—It shall be the duty of the owner, agent or manager to see that an ample supply of clean water under such pressure as may be necessary for the purpose of compliance with the foregoing regulations is available in every working place, and that all appliances or other things necessary to enable the above regulations to be carried out, are provided and used in accordance with these regulations and are maintained in working order.

11.—It shall be the duty of all persons employed in the mine to comply with the requirements of the regulations, and with such instructions as shall be given to them by the officials with a view to such requirements being carried out, and it shall be the duty of all persons employed in the mine, whether workmen or officials of the mine, to report any breach of these regulations to the manager.

HORSES (SECTION 45 AND THIRD SCHEDULE).

Coal Mines General Regulations, 1922, No. 113.

1.—(*Amends the Third Schedule to the Coal Mines Act, 1911—see page 30.*)

2.—(*Amends Section 45(2) of the Coal Mines Act, 1911—see page 21.*)

Coal Mines (Horses) General Regulations, 1949, No. 2330.

(*Amends the Third Schedule to the Coal Mines Act, 1911—see page 30.*)

Horses in Coal Mines (Glanders) Order, 1923, No. 313.

[*Made for purposes of paragraph 1 of the Third Schedule.*]

1.—For the purposes of paragraph 1 of the Third Schedule to the Coal Mines Act, 1911, in pursuance of the provisions of the Mining Industry Act, 1920, the Minister hereby prescribes that horses before being taken underground shall be tested for glanders by a duly qualified veterinary surgeon in the following manner—

(i) The test shall consist of

(a) the intradermic injection of mallein (eye test) ; or

(b) the hypodermic injection of mallein followed by the taking of the temperature of the animal at the 6th, 9th, 12th, 15th and 20th hours respectively after the injection.

(ii) The animal to be tested shall rest for 24 hours before the test is applied.

(iii) The physiological variation of the animal's temperature shall be noted before the test is applied.

(iv) Neither test shall be applied to any animal while showing an abnormal temperature, nor shall the eye test be applied to any animal while showing a condition of the eye or its mucous membrane which might prejudice the test.

(v) The animal shall not be worked for a period of 30 hours after the injection.

(vi) The test shall not be applied to any animal which, after making reasonable inquiry, the veterinary surgeon knows to have received a mallein injection within the preceding month.

(vii) The mallein used for the test shall be obtained from the Royal Veterinary College, and shall be used in the dose specified by the College.

LIGHTING.

Coal Mines (Lighting) General Regulations, 1947, No. 972.

PROVISIONS APPLICABLE TO ALL MINES.

1.—Except in so far as the manager satisfies the inspector of the division that it is not reasonably practicable, there shall be effectively

whitened, and so kept, the roof (or top) and sides of the following places in every mine, that is to say—

(a) such of the shaft insets and shaft sidings as are regularly used ;

(b) the top and bottom of every permanent self-acting incline ;

(c) every siding, landing, passbye, junction, offtake, place at which tubs are regularly coupled or uncoupled or regularly attached to or detached from a haulage rope, and place at which tubs are regularly filled mechanically, except in so far as any such place as aforesaid is within 100 yards of the face ; and

(d) every room and place made to house, and containing, any engine, motor, electrical transformer or switchgear.

2.—(1) At all times when any persons are working, or a shift of persons is passing, sufficient and suitable general lighting shall be provided and maintained below ground—

(a) at such of the shaft insets and shaft sidings as are regularly used ;

(b) at the top and bottom of every permanent self-acting incline ;

(c) at every siding, landing, passbye, junction, offtake and place at which tubs are regularly coupled or uncoupled or regularly attached to or detached from a haulage rope ;

(d) at every place at which tubs are regularly filled mechanically ; and

(e) at every room and place made to house, and containing, any engine or motor :

except in so far as any such place as aforesaid is within 50 yards of the face in a road ventilated by intake air or is within 300 yards of the face in any other road :

Provided that—

(i) the inspector of the division may require that such lighting shall be so provided and maintained at any such place as aforesaid which is within 50 yards or, as the case may be, 300 yards of the face but is not, in either of such cases, within 10 yards of the face ;

(ii) the provisions of this paragraph shall not apply to a mine in which not more than ten persons are employed below ground or to a small mine exempted by the inspector of the division.

(2) So far as reasonably practicable the lighting referred to in the preceding paragraph shall be so arranged as to prevent glare or eye-strain.

3.—Every person employed below ground at any place at which general lighting is provided shall, during the time when he is so employed, have a portable electric lamp or light with him for use in an emergency.

PROVISIONS APPLICABLE TO MINES IN WHICH SAFETY LAMPS
ARE USED.

4.—The provisions of the four next following regulations shall apply only in relation to a mine or part of a mine in which safety lamps are used.

5.—(1) Every safety lamp used—

(a) between 1 January, 1948, and 31 December, 1948 (both inclusive), by any persons (other than a deputy) wholly or mainly employed in a face working, at a ripping or at a place where tubs are mechanically filled, and by any road repairer ; and

(b)* on and after 1 January, 1949, by every workman, howsoever employed, below ground ;

shall be of a type approved by the Minister, the lighting performance of which when new shall, at the end of nine hours continuous burning under prescribed conditions of test, not be less than the prescribed standard.

(2) On and after 1 January, 1949, every person ordinarily employed in haulage operations shall use an electric cap-lamp ; and every such person shall be provided with a proper fitting in which to carry such lamp.

6.—(1) Every bulb used in an electric safety lamp shall be of a type approved by the Minister, and shall be of the appropriate rated voltage, amperes and efficiency for the relevant type of lamp.

(2) Every bulb shall be marked in the prescribed manner.

7.—(1) Every safety lamp shall be provided by the owner of the mine.

(2) Every person to whom a safety lamp is issued shall carry and use it, together with any fittings provided for it, in a proper manner.

(3) Every person who is responsible for the care and maintenance of safety lamps and fittings shall take all such steps as are reasonably practicable to ensure that they are maintained in good and proper order and condition.

(4) Without prejudice to the provisions of the last preceding paragraph, the safety lamps at a mine shall be maintained so that on taking from the lamps returned to the lamp room of the mine at the end of any shift not less than 50 lamps or one half of the total number of lamps so returned (whichever is the less), the lighting performance, when determined (after external cleansing) in the prescribed manner, of at least one half of the number of the lamps so taken is not less than the

* A temporary General Exemption has been granted by the Chief Inspector of Mines (under Regulation 12) to enable certain types of lamps which have a lighting performance below that of the standard prescribed under the regulations to continue in use for the time being until the supply position improves.

prescribed percentage (which shall not be more than 75 per cent.) of the lighting performance as specified in the approval under Section 33 of the Act of that type of lamp.

8.—The provisions of paragraph (1) of Regulation 5, Regulation 6 and paragraph (4) of Regulation 7 of these regulations shall not apply—

(a) to an auxiliary safety lamp intended to be used only in conjunction with a safety lamp of a type approved by the Minister in pursuance of the provisions of the said paragraph (1) of Regulation 5 ;

(b) to a safety lamp provided and used primarily for a purpose other than lighting ; or

(c) to a safety lamp provided for use at a place where sufficient and suitable general lighting is provided ;

(d) to a safety lamp approved for a particular purpose.

9.—The provisions of the two next following regulations shall only apply in relation to a mine or part of a mine in which safety lamps are required to be used by the Act or the regulations of the mine.

10.—(1) Subject to the provisions of the Act and of regulations made thereunder as to the use of electricity in mines, electric lighting from a source of electric power external to the lighting unit may be used—

(a) on any road ventilated by intake air, except within 50 yards of the nearest face from which coal or other mineral is being won ;

(b) on any other road, except within 300 yards of the nearest face from which coal or other mineral is being won ;

(c) in any ventilation district—

(i) in which electric power is in use in the face workings, on any road ventilated by intake air except within 10 yards and on any other road, except within 100 yards, of the nearest face from which coal or other mineral is being won :

Provided that notice in writing of the introduction of electric lighting under this provision is sent forthwith to the inspector of the division ; and

(ii) on any road, except within ten yards of the nearest face from which coal or other mineral is being won, if authorised in writing by the inspector of the division ;

(d) in any other place in the mine in which its use is permitted by the regulations of the mine.

(2) In any case in which electric lighting as aforesaid is used—

(a) the pressure in the system shall not exceed 250 volts ;

(b) if the system is polyphase the neutral point shall be earthed ; if the system is not polyphase the mid-voltage point shall be earthed ;

(c) appropriate precautions shall be taken to prevent damage to the apparatus from shotfiring and the lamp fitting shall be constructed so as to protect the lamp from accidental damage ;

(d) all electric apparatus installed or used for lighting (not being apparatus so installed or used in any place more than 300 yards from any face from which coal or other mineral is being won) shall be of a type approved by the Minister if it is installed or used in any part of a mine in which inflammable gas, although not normally present, is likely to occur in quantity sufficient to be indicative of danger.

(3) The provisions of sub-paragraphs (a) and (b) of the last preceding paragraph shall not apply to electric lighting by direct current in a seam in which such lighting is installed on 1 August, 1947.

11.—Electric lighting from a source of electric power enclosed in the lighting unit and electric lights which are fittings or accessories to machinery or electric plant (including signalling apparatus) and any other means of lighting not specifically mentioned in these regulations, may be used, within such limits and subject to such conditions as the Minister may at any time prescribe whether generally or in respect of any particular mine or class or description of mines :

Provided that only such means of lighting and types of lighting unit and fittings and accessories are used as have been approved by the Minister.

GENERAL.

12.—The Chief Inspector of Mines may, except in any case in which provision is made by these regulations for exemption being granted by the inspector of the division, exempt any mine or part thereof or any specified class or description of mines from the application of the provisions of these regulations, or any of them, if he is satisfied that compliance therewith is inappropriate or not reasonably practicable in the circumstances of the case.

13.—The provisions of Section 119 of the Act shall apply to any approval given by the Minister, and to any exemption granted by the Chief Inspector of Mines, and to any authorisation given by the inspector of the division, under these regulations as they apply to any exemption granted by the inspector of a division.

14.—(1) In these regulations, unless the context otherwise requires, the following expressions have the meanings hereby respectively assigned to them, that is to say—

“ auxiliary safety lamp ” means a lamp of a type approved by the Minister under Section 33 of the Act, for use as officials’ lamps intended only for occasional or intermittent use and not capable of giving light for the whole of a shift ;

“ face ” means, in relation to a seam, the exposed surface from which coal or other mineral is won ; and means, in relation to a stone drift or a ripping, the exposed surface from which the stone is worked ;

“face working” means, in relation to a face at which supports are systematically withdrawn, all that part of the mine between the face and the front line of the packs (if any) or the last row of supports for the time being maintained, whichever is the farther from the face; and means, in relation to a face at which supports are not systematically withdrawn, all that part of the mine between the face and a line parallel to it and 12 feet distant from it;

“ripping” means a place where material is worked from the roof or floor for the purpose of increasing the height of a road or of obtaining material for packing;

“road” means any part of a passage which is maintained in connexion with the working of the mine, except that part which is within ten yards of the face.

PREScriptions UNDER THE ABOVE REGULATIONS.

In pursuance of Regulations 5(1), 6(2) and 7(4) the Minister, on 10 July, 1947, made the following prescriptions—

A. Standard of Lighting Performance.

- (1) In the case of an electric cap lamp—
 - (a) being a lamp fitted with a krypton filled bulb—
 - (i) the mean spherical candle-power shall not be less than 1.2;
 - (ii) the candle-power shall not be less than 1.0 at any point within a solid angle of 100 degrees; and
 - (iii) the ratio of the maximum candle-power to the mean candle-power over the angle of distribution of light shall not exceed 100 to 1.
 - (b) being a lamp fitted with an argon filled bulb—
 - (i) the mean spherical candle-power shall not be less than 1.0;
 - (ii) the candle-power shall not be less than 1.0 at any point within a solid angle of 100 degrees; and
 - (iii) the ratio of the maximum candle-power to the mean candle-power over the angle of distribution of light shall not exceed 100 to 1.
- (2) In the case of any other electric lamp—
 - (a) being a lamp fitted with a krypton filled bulb—
 - (i) the mean spherical candle-power shall not be less than 1.7; and
 - (ii) the mean candle-power over the horizontal angle of distribution of light shall not be less than 2.3.
 - (b) being a lamp fitted with an argon filled bulb—
 - (i) the mean spherical candle-power shall not be less than 1.4; and
 - (ii) the mean candle-power over the horizontal angle of distribution of light shall not be less than 2.0.
- (3) In the case of a flame lamp—
 - (i) the mean spherical candle-power shall not be less than 1.4; and
 - (ii) the mean candle-power over the horizontal angle of distribution of light shall not be less than 2.0.

B. Manner of Marking Lamp Bulbs.

- (1) There shall be marked distinctly and indelibly on the cap on every bulb—
 - (i) the manufacturer's name or trade mark, or both;
 - (ii) the rated voltage and amperage; and
 - (iii) the outline of a Crown enclosing the letters M.F.P. in the following style:



(iv) the letter " K ", in the case of a krypton filled bulb.

(2) If it is not possible to mark the cap of any bulb as aforesaid, it shall suffice to mark that cap as mentioned in (i), (ii) and (iv) of the preceding paragraph and to mark, by etching or by some other distinct and indelible means, the glass of that bulb as mentioned in (iii) of that paragraph.

C. Method of Determining Lighting Performance and the Maintenance Standard.

(1) The lighting performance as therein mentioned shall be determined—

(a) in the case of a cap lamp, by measuring, with a portable photometric integrator, the mean spherical candle-power ;

(b) in the case of any other description of lamp, by measuring, with a portable photometer designed for that purpose, the maximum horizontal candle-power.

(2) The percentage of the lighting performance therein mentioned shall be

60.

The Coal Mines (Pneumatic Lighting Unit) Order, 1948, No. 1918.

[Made in pursuance of No. 11 of the Coal Mines (Lighting) General Regulations, 1947.]

1.—The limits within which, and the conditions subject to which, an electric lighting unit operated by a generator enclosed in the unit and driven by compressed air (in this order referred to as a " pneumatic unit "), being of a type, and having fittings and accessories of a type, approved by the Minister, may be used shall be as provided in this order.

2.—Where any pneumatic unit, or any part of, or any automatic safety device attached to, any pneumatic unit, is found to be defective, that unit shall not be used until the defect has been remedied by an appointed person as specified in paragraph (1) of the next following article.

3.—(1) No person not appointed in writing by the manager as a person competent to carry out work on pneumatic units shall dismantle, repair, alter or adjust any pneumatic unit, or tamper with any automatic safety device attached to any such unit.

(2) The air pressure shall not be turned on in a pneumatic unit unless the unit is fully assembled and closed ; and no unit in which the air pressure has not been turned off shall be opened.

4.—Once at least in every three months—

(a) every pneumatic unit shall be cleaned and thoroughly overhauled in a workshop appointed by the manager for repairs to pneumatic units ;

(b) a test shall be made of the unit, and of the effective working condition of every automatic safety device attached to it, and particulars thereof recorded in a book kept at the mine for the purpose.

5.—(1) In this order the expression " pneumatic unit " has the meaning assigned by Article 1.

Coal Mines General Regulations (Safety Lamps), 1927, No. 1155.

- 1.—(*Amends Section 33 of the Coal Mines Act, 1911—see page 17.*)
- 2.—(*Amends Section 34 of the Coal Mines Act, 1911—see page 17.*)

Safety Lamps (Relighting) Order, 1929, No. 1182.

(*As amended by the Safety Lamps (Relighting) Order, 1938, No. 1408.*)

[*Made in pursuance of Section 33 and Section 35 of the Coal Mines Act, 1911, and of the Coal Mines General Regulations (Safety Lamps), 1927.*]

**USE OF FLAME SAFETY LAMPS FITTED WITH SELF-CONTAINED
RELIGHTING DEVICES.**

- 1.—The lamps shall only be given out to and shall only be used by—
 - (a) deputies ;
 - (b) shot firers appointed in pursuance of Part II of the Explosives in Coal Mines Order ;*
 - (c) the manager and under-manager and such other responsible officials of the mine and responsible persons inspecting or surveying the mine (including workmen's inspectors appointed under Section 16 of the Act) as the manager may specify by authority in writing ;
 - (d) H.M. Inspectors of Mines.
- 2.—The relighting device shall be operated underground only when it is required for relighting the lamp and only by the person to whom it is given out, and the key for operating the relighting device shall at all times remain in his personal custody while he is underground.
- 3.—Before proceeding to relight underground a lamp which has been extinguished as the result of a fall or a blow, or in any other manner likely to have caused damage to it, the person using the lamp shall examine it as carefully as possible. He shall not attempt to relight the lamp if on such examination the lamp appears to him to be or likely to be unsafe or defective, nor shall he attempt to relight the lamp in any place where he has reason to suspect the presence of inflammable gas.
- 4.—On every occasion after relighting the lamp underground the person who is using the lamp shall examine it, and if it appears to him to be or likely to be unsafe or defective he shall carefully extinguish the light and shall not attempt to relight the lamp again during his shift.

* Superseded, in regard to coal mines, by the Coal Mines (Explosives) Order, 1951.

5.—Every person who is using a lamp fitted with a self-contained relighting device shall return it to the surface lamp-room when he has completed his shift and shall at the same time report any defect in the lamp which he may have noticed during the shift. The lamp shall be taken apart at the surface lamp-room, the relighting device shall be attended to and tested in operation and, after this has been done, the parts of the lamp (including the gauzes, the glass and the top of the oil vessel) shall be thoroughly cleaned. The relighting device shall not be operated after the lamp has been cleaned except by the competent person appointed under Section 34 (1) (i) of the Act (who shall operate it only for the purpose of verifying and to the extent necessary to verify that it is in good working order) and by the person who is to use the lamp underground. A lamp with a relighting device which is not in good working order shall not be given out or taken underground.

6.—No relighting device or component part of a relighting device shall be used which is not of a make and type approved for the purpose by the Minister.

7.—A copy of this order* shall be kept posted up in the lamp-room and shall be supplied to every person who uses a lamp fitted with a self-contained relighting device and to every person who is responsible for cleaning, repairing or examining such a lamp or any part of it.

Coal Mines (Lighting and Contraband) General Regulations, 1949, No. 924.

1.—(*Amends Section 32 of the Coal Mines Act, 1911—see page 16.*)

2.—(*Amends Section 35 of the Coal Mines Act, 1911—see page 19.*)

3.—(*Amends No. 3 of the Coal Mines General Regulations (Firedamp Detectors), 1939—see page 83.*)

LOCOMOTIVES.

Coal Mines (Locomotives) General Regulations, 1949, No. 530.

(Note.—*In their application to mines of stratified ironstone and shale, these regulations are subject to the modifications specified in the Ironstone and Shale Mines (Locomotives) General Regulations, 1950, No. 923, which are indicated in the text here by the words in square brackets.*)

PART I.

1-2.—(*Amends Section 42(4) and Section 58 of the Coal Mines Act, 1911—see pages 20 and 24.*)

* The prescribed form of notice is M. & Q. Form No. 98.

PART II.

3.—(*Revokes No. 136 of the General Regulations, 1913, but any consent given under Regulation 136 (b) is deemed to be a consent given under No. 4 of the Locomotives Regulations.*)

PART III.

DESIGN OF LOCOMOTIVES AND SELECTION OF ROADS.

4.—(1) No locomotive for which motive power is supplied by electric power on the trolley-wire system, or by any internal combustion engine other than a diesel engine, shall be used in any mine except with the consent of the Minister ; but, save as aforesaid, and subject to the provisions of these regulations, any locomotive mentioned in subsection (1) of Section 58 of the Act may be so used with the consent of the inspector of the division.

(2) Where any consent of an inspector of a division under the foregoing paragraph is withheld, or where such a consent is after being granted withdrawn, the manager may refer the matter to be determined in manner provided under the Act for settling disputes.

5.—(1) No locomotive shall be used in any mine unless it is constructed in accordance with the provisions of this regulation.

(2) The locomotive and each of its accessories shall, so far as practicable, be so constructed of non-inflammable material that no risk of fire is created ; and any inflammable material shall, unless the Minister approves otherwise, be shrouded with a substantial metallic covering.

(3) If motive power is supplied by an internal combustion engine, effective provision shall be made so that—

(a) air entering the engine is cleaned ;

(b) exhaust gases are cooled and diluted ; and

(c) the emission of flame or sparks is prevented.

(4) In any mine or part of a mine in which safety lamps are required by the Act or the regulations of the mine to be used (otherwise than in an intake airway more than 300 yards from the face) any locomotive shall, in so far as concerns the matters aforesaid, and the construction of the locomotive to prevent the ignition of inflammable gas present in the air, be of a type approved by the Minister.

6.—That part of every storage battery locomotive in which the battery is carried shall be so designed and constructed as to resist rough usage and to be properly ventilated.

7.—Every locomotive used in any mine shall be provided with—

(a) a braking system which can, whether or not any other device for applying the brakes is fitted, be applied by direct mechanical action ;

(b) means for applying sand to the rails ;

(c) unless the locomotive cannot develop more than 25 horse power and cannot on a level road exceed a speed of eight miles per hour, or was in use before 1 *May*, 1949, and cannot reasonably be so provided, a combined speed and mileage indicator so placed as to be readily seen by the driver ;

(d) a headlight capable of showing any obstruction in the road ahead within 200 feet of the locomotive :

Provided that where any locomotive in use at the date aforesaid had before that date been equipped with a headlight, that locomotive may with the consent of the inspector of the division be used as so equipped ;

(e) an adequate warning signal ;

(f) a suitable portable fire extinguisher ;

(g) a seat for the driver ; and such an arrangement of the controls that the driver can see ahead without leaning out of the locomotive ;

(h) a portable lamp for use in emergency.

8.—No locomotive shall be used where the gradient exceeds 1 in 15.

9.—(1) The provisions of this regulation shall apply to any road in which a locomotive is used, so however that the inspector of the division may grant exemption from any of them where compliance is not reasonably practicable or not requisite for safety.

(2) The track shall be ballasted, and where necessary drained.

(3) The weight of rail per yard of rail shall not be less—

(a) if the road is used only for the carriage or haulage of stores or supplies for the working of the mine and no locomotive therein exceeds five tons in weight, than 28 pounds ;

[The corresponding provision applicable to mines of stratified ironstone and of shale is—

(a) *if no locomotive in the mine exceeds three and one half tons in weight, than 24 pounds ;]*

(b) in any other case, than 40 pounds, or 10 pounds with an addition of 5 pounds for each ton of weight on one pair of wheels, whichever is the greater.

(4) Every track shall be so constructed that—

(a) the distance between the centres of adjacent sleepers does not exceed two feet nine inches ;

[The corresponding provision applicable to mines of stratified ironstone and of shale is—

(a) *the distance between the centre of adjacent sleepers does not exceed—*

(i) *if no locomotive in the mine exceeds three and one half tons in weight, three feet ; or*

(ii) *in any other case, two feet nine inches ;]*

(b) rail joints are secured by suitable fishplates having at least four bolts.

(5) Curves shall be of such radius as is safe ; and either or both of the following precautions shall where necessary be taken, that is to say, raising of the outer rail and provision of a check rail.

(6) No locomotive shall be used in any road where there are not, after allowing for swing of the locomotive and trucks, clear spaces not less in extent than the following, that is to say—

(a) below the roof or its supports—

(i) if the locomotive is fitted with a covered cab, one foot ;

(ii) in any other case, so much as to enable the driver to stand upright in the locomotive ;

[The corresponding provision applicable to mines of stratified iron-stone or of shale is—

(a) *below the roof or its supports—*

(i) *in a road in which any locomotive was used, or for use in which any locomotive was required to be delivered under a contract made, before 1 May, 1949, one foot ;*

(ii) *if the locomotive is fitted with a covered cab, one foot ;*

(iii) *in any other case, so much as to enable the driver to stand upright in the locomotive ;]*

(b) on that side of the track on which refuge holes are provided, two feet ;

(c) on the side of the track opposite to the refuge holes—

(i) where there are not more than two tracks, one foot ;

(ii) in any other case, two feet ;

(d) between any two adjacent tracks (if there are more tracks than one) so much as to afford a clearance of at least one foot between any locomotive or truck on one and any locomotive or truck on the other of them.

10.—The manager shall—

(a) determine in respect of each road the maximum load to be hauled by any locomotive and the maximum speed of any train ; and cause notices specifying the same to be posted at appropriate places ;

- (b) cause warning notices drawing attention to any necessary precautions to be posted in the roads at appropriate places ; and
- (c) give to each driver directions in writing with respect to loads, speed and all precautions necessary for safe running.

PART IV.

VENTILATION.

11.—In every mine or part of a mine in which safety lamps are required by the Act or the regulations of the mine to be used, determinations shall be made in accordance with the provisions of the four next following regulations of the firedamp content in every road or part of a road in which any locomotive is used :

Provided that the inspector of the division may exempt from the requirements of this regulation any road or part of a road in which he is satisfied that the normal firedamp content is not such as to make regular determinations necessary : and

Provided also that in any main intake airway beginning at a shaft or outlet to the surface, no determination need be made at any point more than 300 yards from any face.

12.—Determinations shall be made by a competent person appointed in writing by the manager, who shall—

- (a) use apparatus of a type approved by the Minister ; or
- (b) take samples of air, which shall be analysed within four days of being taken.

13.—The points at which determinations are made shall be—

- (a) at each end of each road or part of a road in which any locomotive is used ;
- (b) at such other points as may be fixed by the manager ; so however that the manager shall, if the inspector of the division so require, vary any points so fixed or fix one or more additional points.

14.—(1) Subject to the provisions of the next following paragraph, determinations at each place shall be made once at least in every week at the time when the firedamp content is likely to be greatest, so however that, when at any place—

(a) a firedamp content exceeding 0·8 per cent. is shown, determinations at that place shall be made at intervals not exceeding 24 hours for so long as the firedamp content shown at that place exceeds 0·8 per cent., and for the seven next following working days ; and

(b) no determination has during the last preceding month shown a firedamp content exceeding—

- (i) in the case of an intake airway, 0·2 per cent. ;
 - (ii) in the case of a return airway, 0·6 per cent ;
- determinations may be made at that place once in every month.

(2) Where any alteration in any ventilating arrangements is likely to affect substantially the quantity of air circulating in any road or part of a road in which any locomotive is used, determinations shall be made therein as soon as practicable after the said alteration.

15.—Particulars of every determination made shall be recorded forthwith in a book to be kept at the mine for the purpose.

16.—Where at any place a determination shows a firedamp content exceeding $1\frac{1}{4}$ per cent., or any indication of inflammable gas is shown in any flame safety lamp—

(a) the person making that determination, or the person using the lamp, as the case may be, shall immediately inform the official in charge of the district ; who shall after verifying the presence of inflammable gas as aforesaid discontinue the use of every locomotive in that part of the road ;

(b) no locomotive shall after the said discontinuance be used in that part of the road except by direction of the manager when the manager is satisfied that the firedamp content therein has been reduced below $1\frac{1}{4}$ per cent. ;

(c) the manager shall as soon as practicable report the said discontinuance to the inspector of the division.

PART V.

WORKING OF LOCOMOTIVES AND ENGINES.

17.—(1) Each haulage road in which any locomotive is used in any mine shall be placed in the charge of a competent person appointed in writing by the manager.

(2) Once at least in every 24 hours each such road shall be inspected by, or under the supervision of, the person aforesaid with particular regard to—

- (a) clearance and freedom from obstructions ;
- (b) the state of the track ;
- (c) the state of the roof and sides ;
- (d) ventilation and absence of inflammable gas ;
- (e) coal dust ;
- (f) general safety.

18.—(1) Once at least in every 24 hours each locomotive in any mine shall be examined by a competent person appointed in writing by the manager.

(2) Once at least in every seven days each such locomotive shall be examined by an electrician and mechanic, appointed in writing by the manager, who shall ensure that—

- (a) every part requiring to be cleaned is properly cleaned ;
- (b) the locomotive is in all respects in proper working order.

19.—(1) Once at least in every seven days the braking system of each locomotive in any mine shall be examined and tested by a competent person appointed in writing by the manager; and the said test shall include applications of the brakes—

(a) when the locomotive is moving, by direct mechanical action and by each other means provided; and

(b) when the locomotive is at rest with the engine stopped, by any means provided other than direct mechanical action and for a period of at least ten minutes.

(2) Immediately after any repairs or adjustment to the braking system of any locomotive, an examination and test shall be made as provided in the foregoing paragraph.

20.—Any person making any inspection, examination or test in pursuance of the three last foregoing regulations shall forthwith record particulars thereof in a book to be kept at the mine for the purpose.

21.—No locomotive shall be used in any mine if—

(a) it has any defect liable to affect its safe running; or

(b) it is not maintained in proper working order or replenished with all necessary oil and consumable stores.

22.—Any protective device fitted to an exhaust opening of an internal combustion engine shall, whenever necessary, and in any event not less often than once in every period of 24 hours during which the engine has been run (or, if, in relation to any specified device, the Minister has specified longer periods, not less often than once in every such period), be thoroughly cleaned or replaced by a like device in clean condition.

23.—(1) No locomotive shall in any mine be operated, except for repairs or tests, otherwise than by an appointed driver, being a person certified to be competent without supervision to drive a locomotive of the type concerned, and, if the locomotive is used for the haulage of persons, a person not less than 21 years of age, [*or, in the case of any mine of shale, 18 years of age.*]

(2) In this regulation the expression “appointed driver” means a person appointed by the manager to be a driver of locomotives; and the expression “certified” means certified by the person appointed by the manager to supervise the competence of all drivers of locomotives in that mine.

24.—(1) Except during shunting operations—

(a) no locomotive shall be used in any mine for moving any truck otherwise than by hauling from in front;

(b) no truck containing timber or other materials exceeding in length the length of the truck shall be coupled next to the locomotive or to any truck in which any person is being conveyed.

(2) A red light visible at a distance of 200 feet shall be attached at the rear of the last truck of each train in any mine, and at the rear of each unattached locomotive.

[The corresponding regulation applicable to mines of stratified iron-stone or of shale is—

24.—(1) *No locomotive shall be used in any mine for moving any truck otherwise than by hauling from in front except—*

(a) during shunting operations, or

(b) in a road in which one or more locomotives were used for moving material before 1 May, 1949,

and, where any truck is moved otherwise than by hauling from in front by virtue of sub-paragraph (b), a white light visible at a distance of 200 feet shall be attached at the front thereof (or, if more than one truck is being moved by the same locomotive, at the front of the leading truck) :

Provided that nothing in this paragraph shall apply to the use of any locomotive to move a single truck in a working place distant from the face less than 400 yards.

(2) *Except during shunting operations, no truck containing timber or other materials exceeding in length the length of the truck shall be coupled next to the locomotive or to any truck in which any person is being conveyed.*

(3) *A red light visible at a distance of 200 feet shall be attached at the rear of the last truck of each train in any mine, and at the rear of each unattached locomotive :*

Provided that this paragraph shall not apply to any train or locomotive distant from the face less than 400 yards.]

25.—*Except with the permission of the manager, no person shall be on any locomotive in any mine when it is in motion unless he is—*

(a) the driver of the locomotive ; or

(b) a person engaged in shunting operations for which the locomotive is at the time being used ; or

(c) a person appointed under Regulation 23 of the General Regulations to accompany and have charge of a train drawn by the locomotive ; or

(d) a person engaged in maintaining or testing the locomotive.

26.—*The driver of a locomotive shall not leave it unattended away from the place where it is housed when not in use, unless he has ensured that it cannot be set in motion by any unauthorised person.*

PART VI.

ADDITIONAL PROVISIONS—DIESEL LOCOMOTIVES.

27.—*Every diesel locomotive in any mine shall, when not in use, be housed in a suitable housing station—*

(a) provided with two means of egress ;

(b) ventilated by a through current of air sufficient to render the exhaust gas harmless while the engine is being run in the housing station ;

(c) constructed of non-inflammable material ;

(d) having a floor of smooth concrete ;

(e) fitted with an inspection pit or other effective means of inspecting the locomotive from below ; and

(f) kept provided with equipment for extinguishing fire.

28.—(1) No diesel locomotive shall be replenished with fuel oil in any mine except at a filling station appointed by the manager.

(2) The provisions of sub-paragraphs (a), (b), (c), (d) and (f) of the last foregoing regulation shall apply to any filling station as they apply to a housing station, so however that the floor of each filling station shall be provided with a sill ; and each filling station shall be so equipped that the spilling of oil is, so far as practicable, prevented.

(3) Any oil spilt shall forthwith be taken up with a non-inflammable absorbent, which shall be deposited in a fireproof receptacle and as soon as practicable removed from the mine.

(4) No person shall smoke, or use any light or lamp other than a locked safety lamp or an electric lamp adequately protected, in any filling station, or within ten yards of any filling station.

[The following proviso to paragraph (4) applies only to mines of stratified ironstone or of shale—

Provided that this paragraph shall not apply in relation to any filling station constructed before the 1 May, 1949, in a mine in or for which any diesel locomotive was then in use or was required to be delivered under a contract made before that date.]

(5) No oil shall be taken from any container in a filling station while any internal combustion engine in the filling station is running.

29.—(1) No oil shall be used in any mine for supplying motive power to any diesel locomotive which does not comply with the standard specified for Class " A " fuel in the " British Standard (Fuels for Oil Engines) " as published by the British Standards Institution.

(2) No oil for use as aforesaid shall be taken below ground except in an adequate container which does not leak.

(3) No such oil shall at any time be stored below ground unless—

(a) it is, until transfer into the tanks of a locomotive, stored in a filling station in an adequate container which does not leak ;

(b) the quantity thereof does not exceed the quantity which with any oil then in the tanks of the locomotive or locomotives for which it has been brought below ground will according to the normal user of those locomotives be consumed within the 48 hours next following.

30.—A copy of the two last foregoing regulations shall be kept posted and clearly visible in each filling station.

31.—A diesel locomotive shall be deemed to have a defect liable to affect its safe running if gas from its exhaust is found to contain more than two parts of carbon monoxide, or one part of oxides of nitrogen per thousand.

[The corresponding regulation applicable to mines of stratified ironstone or of shale is—

31.—*A diesel locomotive shall be deemed to have a defect liable to affect its safe running if gas from its exhaust is found to contain more—*

(a) if the locomotive was in use before 1 May, 1949, or was required to be delivered under a contract made before that date, than four parts of carbon monoxide, or one and one half parts of oxides of nitrogen, per thousand ;

(b) in any other case, than two parts of carbon monoxide, or one part of oxides of nitrogen, per thousand.]

32.—(1) The engine of a diesel locomotive shall not be kept running in a mine when the locomotive is stationary except—

(a) during brief halts while in use ; or

(b) while being tested.

(2) No diesel locomotive shall be used in any place where there is not for the time being a sufficient current of air to render the gas from its exhaust harmless.

(3) Where in any working place or road in which diesel locomotives are in use there is found in the general air a concentration of carbon monoxide greater than—

(a) fifty parts per million, immediate steps shall be taken to disperse the said concentration ;

(b) one hundred parts per million, the operation of every diesel locomotive in the district shall be discontinued until it is determined that the concentration of carbon monoxide in the general air at that place does not exceed fifty parts per million.

33.—(1) In the case of each diesel locomotive in use in any mine a sample of the gas from the exhaust when the engine is being run—

(a) at maximum speed on full load ;

(b) at normal idling speed on no load ;

shall be taken and analysed once at least in every three months.

(2) A sample of the general air at each appointed place shall be taken and analysed once at least in every month.

(3) In this regulation the expression “appointed place” means a place appointed by the manager, so however that the manager shall, if the inspector of the division so require, vary any appointed place,

or appoint one or more additional places ; and there shall be sufficient appointed places to ensure that any harmful concentration in the general air in any working place or road in which any diesel locomotive is being used shall be detected.

(4) Particulars of the analysis of each sample taken in pursuance of paragraph (1) or (2) of this regulation shall be recorded in a book to be kept at the mine for the purpose.

PART VII.

ADDITIONAL PROVISIONS—STORAGE BATTERY LOCOMOTIVES.

34.—(1) No battery of a storage battery locomotive shall be charged or changed below ground in any mine except at a place appointed for that purpose by the manager.

(2) Every place so appointed for charging (in these regulations referred to as a “charging station”) shall be—

- (a) constructed of non-inflammable material ;
- (b) ventilated by a through current of air sufficient to render gases harmless ;
- (c) so fitted that in relation to the said current of air—
 - (i) the charging apparatus is on the intake side of the battery racks ;
 - (ii) the current passes from the battery racks directly into a return airway ;
- (d) so equipped that the spilling of water or electrolyte is, so far as practicable, prevented ; and
- (e) kept provided with equipment for extinguishing fire.

35.—(1) No person shall smoke, or use any light or lamp other than a locked safety lamp or an electric lamp adequately protected, in any charging station, or within ten yards of any charging station.

(2) Any water or electrolyte spilt on any battery in a charging station shall forthwith be removed.

36.—A copy of the two last foregoing regulations shall be kept posted and clearly visible in each charging station.

PART VIII.

MISCELLANEOUS.

37.—The provisions of Parts III to VI both inclusive of these regulations relating to the use of any locomotive in any mine shall be construed as applying only to the use of that locomotive below ground therein.

38.—(1) Except where exemption from compliance may be granted by the inspector of the division, the Chief Inspector of Mines may

exempt any mine or part of a mine, or any class or description of mines, from compliance with any provision of these regulations where compliance in the particular case is not reasonably practicable or not requisite for safety.

39.—(1) In these regulations the following expressions have the meanings hereby assigned to them respectively, that is to say—

“ charging station ” has the meaning assigned by Regulation 34 ;

“ face ” means, in relation to a seam, the exposed surface from which coal or other material is won ;

“ firedamp content ” means the percentage of inflammable gas present in the general body of the air ;

“ locomotive ” means a mechanically propelled vehicle running on rails constructed or used for hauling trucks ;

“ road ” means any part, not within ten yards of the face, of a passage maintained in connection with the working of the mine ;

“ truck ” includes any tub, mine-car, carriage, bogie or other vehicle whether used for the carriage of persons or of mineral or other articles.

MEDICAL EXAMINATIONS.

Coal Mines (Medical Examinations) General Regulations, 1952 No. 2070.

1.—(1) The owner of every coal mine shall make arrangements for the medical examination at the expense of the owner by a registered medical practitioner approved by the Minister of Fuel and Power (in these regulations referred to as “ the Minister ”) of every person first employed, or about to be employed, in or about that coal mine after the coming into operation of these regulations, other than—

(a) in the case of a mine in the county of Brecon, Carmarthen, Glamorgan, Monmouth or Pembroke, a person who has been medically examined in connection with employment at another mine in one of these counties, or was employed at such a mine before the coming into operation of these regulations ;

(b) in the case of a mine not in one of those counties, a person who—

- (i) has been medically examined in connection with employment at another mine ;
- (ii) is not less than 21 years of age when first employed in or about a coal mine ;
- (iii) was not less than 21 years of age before the coming into operation of these regulations ; or
- (iv) was not less than 18 years of age and had been employed in or about a coal mine before the coming into operation of these regulations.

(2) Such arrangements shall provide for the medical practitioner to issue to the person examined and the manager of the mine certificates in a form approved by the Minister of the fitness of the person examined for employment in or about a coal mine.

(3) A certificate may state conditions or limitations as respects the nature of the work in or about a coal mine on which the person examined may be employed and may state that further examination is requisite after a period specified in the certificate.

(4) The arrangements made under paragraph (1) shall provide for any further medical examination stated to be requisite in such a certificate.

2.—(1) Where any person, in respect of whose medical examination arrangements are required to be made by the preceding regulation is employed, or about to be employed, in or about any coal mine, the manager shall, not later than four days from the beginning of such employment—

(a) give notice to the medical practitioner by whom that person is to be examined, including the name, address and age of that person ; and

(b) give notice to that person requiring him to attend the medical practitioner for examination within 30 days of the beginning of his employment in or about that mine.

(2) Where any person in respect of whose further medical examination arrangements are required to be made by the preceding regulation is employed in or about any coal mine, the manager shall not later than four days before the end of the period specified in his certificate—

(a) give notice to the medical practitioner by whom that person is to be examined, including the name, address and age of that person and particulars of the certificate already issued to him ; and

(b) give notice to that person requiring him to attend the medical practitioner for further examination within 30 days after the end of the period specified in that certificate.

3.—(1) No person, who has failed without reasonable cause to submit himself for medical examination or further medical examination in accordance with a notice given to him under the last preceding regulation, shall be employed in or about any coal mine until he has been medically examined or further examined, as the case may be, in accordance with these regulations.

(2) No person shall be employed in or about any coal mine, or employed in any particular capacity or in particular work in or about a coal mine, after the end of a period of 14 days from the issue, after medical examination in accordance with these regulations, of a certificate stating that he is unfit for any employment in or about a coal mine, or for employment in that capacity or in that work, as the case may be.

4.—(1) The manager of every coal mine shall keep at the office of the mine a register in a form approved by the Minister* showing—

(a) the name, address, age and date of first employment of every person who is or has been employed in or about that mine and who is or was required to be medically examined in accordance with these regulations ;

(b) such particulars of any notice given to that person to attend for medical examination or further examination and of any certificate issued after such examination as may be specified in that form ; and

(c) in any case in which the employment of a person was determined in pursuance of Regulation 3, the date and reason therefor.

(2) The manager of any coal mine shall, if so requested by the manager of any other coal mine, send to him any such information recorded in the register with respect to any person as he may reasonably require to enable him to comply with these regulations with respect to the employment of that person at that other mine.

(3) A register kept in pursuance of this regulation shall not be destroyed or removed from the office of the mine without the approval in writing of the inspector of the division, and if the mine is abandoned it shall within three months of the abandonment be sent to the Minister or a person approved by him for preservation for such period as he may consider expedient for the purposes of these regulations.

OFFICIALS AND INSPECTIONS.

Coal Mines (Officials and Inspections) General Regulations, 1951, No. 848.

(As amended by the Coal Mines (Officials and Inspections) General Regulations, 1952, No. 845).

PART I.

APPOINTMENT AND GENERAL DUTIES OF DEPUTIES.

1.—(1) *(Amends Sections 14(1) and (2) of the Coal Mines Act, 1911—see page 9.)*

(2) Amendments consequential on the provisions of the foregoing paragraph shall be made—

(a) to the Act, as specified in the first part of the schedule to these regulations† ; and

(b) to the several regulations mentioned in the first and second columns of the second part of the said schedule,‡ as specified in relation to them respectively in the third and fourth columns of that part.

* The approved form of register is M. & Q. Form No. 155.

† The first part of the schedule is reproduced at the end of Part One of this volume.

‡ The amendments made by the second part of the schedule are incorporated in the revised versions of the regulations which appear in this volume.

(3) Every person appointed before the commencement of these regulations to be a fireman or examiner shall, for all purposes of the Act, be deemed to have been appointed a deputy.

DEPUTIES' DISTRICTS AND MEETING STATIONS.

2.—(*Amends Section 14(3) of the Coal Mines Act, 1911—see page 10.*)

3.—(*Amends Section 63 of the Coal Mines Act, 1911—see page 25.*)

4.—(1) The manager shall keep in the office at the mine one or more plans, on a scale not less than six inches to one mile, showing—

(a) the limits of each deputy's district as defined by him, and

(b) each meeting station as appointed by him,

and shall within seven days of any definition or appointment by him varying any such district or station cause the relevant plan to be revised accordingly.

(2) The provisions of subsections (4) and (5) of Section 20 of the Act shall with the requisite modifications apply in relation to any plan kept in pursuance of this regulation as they apply in relation to plans kept in pursuance of subsection (1) of that section.

PRE-SHIFT AND OTHER INSPECTIONS.

5.—(*Amends Section 64 of the Coal Mines Act, 1911—see page 26.*)

6.—(*Amends Section 65 of the Coal Mines Act, 1911—see page 27.*)

MAINTENANCE OF EQUIPMENT, ETC.

7.—The deputy in charge of a deputy's district shall take all reasonable steps to ensure that—

(a) all equipment, apparatus and plant in use in that district are maintained in good order and safe condition ; and

(b) if any equipment, apparatus or plant is found by or reported to him to be in an unsafe condition, it is not used while in such a condition.

8.—Where sheets or ducts are required to be used for the ventilation of any working place, the deputy in charge of the district shall ensure that they are so placed and maintained that an adequate amount of air reaches that place.

DANGEROUS PLACES.

9.—The deputy in charge of any district shall ensure that every place therein which by reason of the presence of gas, or for any other cause, is dangerous is kept so fenced off at each approach that it cannot be inadvertently entered, and that each such fence is marked with a danger sign provided by the owner.

CONTROL OF PERSONS UNDER HIS CHARGE.

10.—(1) The deputy in charge of any district shall—

(a) keep a record of the names of the workmen under his charge in that district during his shift ; and

(b) take all reasonable steps to ensure that every such workman understands and carries out—

(i) his duties under the Act, the regulations of the mine and any order made under the Act ; and

(ii) every direction given to him with a view to safety.

(2) A direction given to any person by the deputy in charge of a district requiring that person forthwith to leave that district and to return to the surface, on the ground that that person has infringed, or has attempted to infringe, any provision of the Act, or of the regulations of the mine, or of any order made under the Act, shall for the purposes of Section 74 of the Act be deemed to be a direction with respect to working given to that person with a view to safety.

DUTIES ON CONCLUSION OF SHIFT.

11.—(1) At the end of a shift in any district, the deputy in charge, or a person appointed by him under Regulation 14, shall, unless there is any person then in that district for the succeeding shift, ensure that—

(a) the ventilation is taking its proper course ; and

(b) except for what is necessary for the safety of the mine, all lights are extinguished and all power cut off :

Provided that, if workmen are to arrive in the district for the succeeding shift before the expiry of 30 minutes from the departure of the last workman in that shift, fixed electric lights need not be extinguished.

(2) The deputy in charge of a district shall not leave the mine at the end of any shift if there are to be workmen at work in that district during the succeeding shift, until he has conferred with the deputy succeeding him, and has given to that deputy all information which he then has which is necessary for the safety of persons employed in the district :

Provided that this paragraph shall not apply if no workman is to arrive in the district for the succeeding shift before the expiry of one hour from the departure of the last workman in the shift in question.

DEPUTY'S REPORT ON SHIFT.

12.—(1) The deputy in charge of a district shall, as soon as practicable after the end of his shift, record in a book* to be kept at the mine for the purpose a report (to be known for the purposes of the Act, in relation to that shift, as the " general report ") on the performance of all his duties during the shift, and on anything known to him which has occurred which is material to the proper working of the mine or the safety and health of persons employed in his district.

* The prescribed form of record is M. & Q. Form No. 42A.

(2) Every report made in pursuance of this regulation shall, except in so far as it consists of printed matter, be in the handwriting of the deputy concerned, and shall be signed by him.

MISCELLANEOUS DUTIES.

13.—If any way or part of a way affording means of egress from a deputy's district to the surface for the purposes of Section 36 of the Act is not ordinarily used for travelling, each deputy regularly assigned to be in charge of that district shall forthwith make himself acquainted with that way or that part, and shall thereafter travel the whole of it once at least in every month.

14.—(1) If the deputy in charge of a district leaves the district while workmen are still at work therein, he shall appoint a competent person to exercise control in it on his behalf, so however that no such appointment shall relieve the deputy of his duties with regard to inspections and reports.

(2) While any person so appointed is in charge of the district, he shall (within the limits specified in paragraph (1)) perform all duties, and may exercise all powers, attaching to the deputy concerned under the Act or the regulations of the mine.

PART II.

QUALIFICATIONS OF DEPUTIES.

15.—(1) (*Amends Section 15 of the Coal Mines Act, 1911—see page 11.*)

(2) (*Amends Section 9 of the Coal Mines Act, 1911—see page 7.*)

PART III.

INSPECTION OTHERWISE THAN UNDER SECTIONS 64 AND 65 OF THE ACT.

Roads and Airways.

16.—(*Amends Section 66 of the Coal Mines Act, 1911—see page 28.*)

Safety Lamps.

17.—(1) No workman shall travel to his work in any mine in which safety lamps are required to be used, unless, before or as soon as practicable after he entered the mine, his safety lamp was examined by a deputy or other competent person appointed by the manager for the purpose and found to be in safe working order and properly locked.

(2) If and for so long as, in any part of any mine, safety lamps are introduced as a temporary precaution, the manager shall appoint a place for the examination of safety lamps in pursuance of this regulation ; and no workman shall proceed beyond the place so appointed, unless his safety lamp was examined at that place by a person appointed as if in pursuance of paragraph (1) and found to be in safe working order and properly locked.

PART IV.

UNDERGROUND OFFICIALS SUPERIOR TO DEPUTIES.

Qualifications.

18.—(1) No person shall be qualified to be appointed or to be an underground official superior to the deputies but inferior to the manager or under-manager in any mine, unless he is—

(a) the holder of a first or second-class certificate of competency under the Act ;

(b) not less than 24 years of age and the holder of a deputy's certificate, granted on a report by the Mining Qualifications Board that he has the qualifications required under paragraph (a) of subsection (4) of Section 15 of the Act, being a person who has had not less than one year's experience as a deputy ;

(c) not less than 27 years of age and the holder of a deputy's certificate, granted on a report by the Board aforesaid that he has the qualifications required under paragraph (b) of subsection (4) aforesaid, or of a certificate made in pursuance of subsection (2) of the said Section 15, being a person who has had not less than two years' experience as a deputy ; or

(d) a person who has during the period beginning on 1 June, and ending on 31 August, 1952, been certified by the manager of a mine to be a person who at some time before the said 1 June had been appointed in writing to perform, and had in fact performed, the duties of such an official in that mine, and who immediately before that day was fully qualified to perform them.

(2) A certificate for the purposes of sub-paragraph (d) of paragraph (1) shall be made on a form provided for the purpose by the Minister, and shall within 14 days of being made be authenticated by the owner of the mine, or by a representative of the owner superior to the manager.

Appointment.

19.—All officials appointed under this part of these regulations to perform duties in relation to the working of the mine shall be appointed by the manager in writing.

Duties.

20.—(1) Each official appointed as mentioned in Regulation 19 shall be responsible for the observance of all safety requirements relating to his duties, and for the safe performance of any operation which he has been appointed to supervise.

(2) Each such official shall—

(a) during his shift, confer with the deputy in charge of each

district to which his duties relate, and with each other official then performing duties in or responsible for any such district or any other part of the mine to which his own duties relate ;

(b) at the end of his shift, give to any person succeeding him in the performance of his duties all information which he then has which is necessary for safety ; and

(c) within 24 hours of the end of his shift, examine and countersign any general report which includes matters relating to the performance of his own duties, in so far as it relates to those matters.

PART V.

EXCEPTIONS.

21.—These regulations shall not, in so far as concerns Regulations 4, 8, 9, 11, 13 and 14, apply to shafts in the course of being sunk.

PNEUMOCONIOSIS.

Coal Mines (South Wales) (Pneumoconiosis) Order, 1943, No. 1696.

[*Made under Regulation 60a of the Defence (General) Regulations, 1939.*]

1.—Every person carrying on a coal-mining undertaking in South Wales shall, if so directed on behalf of the Minister by the Chief Inspector of Mines or by the inspector of the division in which the mine, or that part thereof, to which the direction applies is situate, take such one or more of the following measures for the reduction of the amount of airborne dust below ground as may be specified in the direction, that is to say :—

(i) the injection of water into the working face so as to damp the slips and cleavages of the seam ;

(ii) the use, in association with mechanical coal-cutters in operation, below ground, of sprays or jets of water so as to damp the cuttings as these are formed ;

(iii) the use, in association with conveyors and loaders in operation below ground, of sprays or jets of water so as to damp the dust ;

(iv) the use of exhaust appliances at the delivery ends of conveyors and loaders in operation below ground.

2.—Any direction under the preceding article of this order may be given so as to apply to any mine, or any part thereof, or to any mechanical coal-cutter, conveyor or loader when in operation and may specify the date or dates by which such measures as are specified therein are to be taken.

3.—Every undertaker shall provide and shall maintain in good and proper working order and condition all necessary equipment required

for the due carrying out of the measures specified in a direction given to him under Article 1 of this order.

4.—The manager and every agent of any mine in which any equipment for the reduction of airborne dust is installed (whether or not in pursuance of the provisions of this order) and every person responsible for the use, care and maintenance of such equipment, shall take all such steps as are reasonably practicable to ensure that full and proper use is made thereof and that it is maintained in good and proper working order and condition.

5.—No person, except with permission granted by the manager of the mine in which any such equipment as is mentioned in the last preceding article of this order is installed or by a person authorised in that behalf by such manager, shall remove, alter, interfere or tamper with, or damage any such equipment or shall obstruct its operation.

6.—The Chief Inspector of Mines or the inspector of the division as aforesaid may vary or revoke any direction given under Article 1 of this order and may, to such extent, during such periods, on such terms and subject to such conditions (if any) as he may specify, exempt any undertaker from compliance with any such direction.

7.—In this order and (unless the contrary intention appears) in every direction given and exemption granted under the provisions of this order, unless the context otherwise requires, the following expressions have the meanings hereby respectively assigned to them, that is to say—

“Undertaker” means a person carrying on a coal-mining undertaking in South Wales to whom a direction has been given under the provisions of Article 1 of this order.

“South Wales” means the counties of Brecon, Carmarthen, Glamorgan, Monmouth and Pembroke, or any one or more of them.

RESCUE (SECTION 85).

Coal Mines General Regulations (Rescue), 1928, No. 971.

(As amended by the Coal Mines (Rescue) Amending Regulations of 1935, No. 652.)

PART I.

GENERAL OBJECT OF THE REGULATIONS.

1.—It shall be the duty of the owners, jointly and severally, of the mines to which these regulations apply, to make adequate provision in the manner laid down in the regulations for the safe conduct of rescue and other necessary work in mines after an explosion or a fire, or otherwise in an atmosphere which may be dangerous to life.

PART II.

SCOPE OF THE REGULATIONS.

2.—The mines to which these regulations apply are all mines in which coal or oil shale is worked and in which the total number of persons employed underground exceeds ten; provided that the Minister may exempt from any of the provisions of the regulations, either absolutely or subject to conditions—

(i) any mine in which the total number of persons employed underground is less than 100; and

(ii) any other mine which is outside a radius of 15 miles from a Central Rescue Station,

if in each case the Minister is satisfied that it is not reasonably practicable for the owner to comply with such provisions.

PART III.

GENERAL ORGANISATION.

3.—There shall be provided and maintained at convenient centres sufficient stations (hereinafter called “Central Rescue Stations”) fully equipped for rescue work and for the training of rescue workers as hereinafter prescribed. For the purpose of determining the number of Central Rescue Stations required the radius of action of a station shall be deemed to be 15 miles or such greater distance, not exceeding 20 miles, as the Minister may by order allow in particular cases on the ground of special circumstances, and subject to such special conditions as the order may prescribe to ensure that the service over the wider radius will be speedy and effective.

4.—Every Central Rescue Station shall be placed under the immediate control of a competent superintendent who has been fully trained in rescue work and (unless so employed prior to the commencement of these regulations) has had five years’ practical experience underground in a mine.

5.—The owner of every mine to which these regulations apply shall affiliate the mine to a Central Rescue Station in such manner as to acquire the right of calling for and obtaining the full services of the station at any time. Every mine shall be in telephonic communication with the station to which it is affiliated:

Provided that if the inspector of the division is satisfied in respect of any mine that effective arrangements for rescue work in accordance with these regulations have been made at the mine independently of a Central Rescue Station he may exempt the mine from this regulation, subject to such conditions as he may prescribe.

6.—Sufficient rescue workers shall be maintained and organised in accordance with the requirements contained in the first schedule to these regulations, namely, either (a) by the provision of a permanent

rescue corps at the Central Rescue Station and of trained rescue workers at the mine, or, if there is no permanent rescue corps at the Central Rescue Station, (b) by the provision of rescue brigades at the mines.

No breach of this regulation shall be deemed to have arisen in consequence of failure to maintain at the mine the full number of rescue workers required by the regulation, if the owner of the mine proves that he had made every effort to comply with the regulation, and that the failure was due to causes over which he had no control.

7.—(a) The members of a permanent rescue corps shall be continuously employed at the station, and in constant residence there, provided that with the approval of the Minister, and subject to such conditions as he may prescribe, members of a permanent rescue corps may be employed in mines in the immediate neighbourhood of the station so long as not more than three of them are engaged underground in the same shift, and may also reside away from the station so long as they reside within half a mile of the station and are in communication with it by telephone or electric signal or by other means approved by the inspector of the division.

(b) As regards other rescue workers, effective arrangements shall be made at every mine for summoning them immediately their services are required.

PART IV.

SELECTION OF RESCUE WORKERS : INSTRUCTION AND PRACTICE.

8.—(a) The persons to be trained in rescue work shall be carefully selected on the grounds of their coolness, powers of endurance and general suitability for the work, and, in the case of men from mines to be trained to co-operate with permanent rescue corps, also on the ground of their knowledge of the mine. In particular, no person shall be trained in rescue work unless he fulfils the conditions and possesses the qualifications specified in the second schedule to these regulations.

(b) Every rescue worker so long as he continues to practise shall be re-examined every 12 months by a duly qualified medical practitioner in accordance with the rules contained in the second part of the second schedule to these regulations, and no person shall continue to practise unless he is certified to be fit.

9.—There shall be employed at every Central Rescue Station a sufficient number of competent instructors to train rescue workers. One or more of these instructors shall always be in attendance at the station and one of them shall be appointed to take charge of the station in the absence of the superintendent. The number of instructors employed shall not be less than the number specified in the first part of the third schedule to these regulations.

10.—(a) Every person selected for training in rescue work shall undergo the course of instruction and practices set out in the second part

of the third schedule to these regulations, or such other course of instruction and practices as the Minister may from time to time approve, until he has been certified by the superintendent to be efficient.

(b) Rescue workers who have been certified to be efficient shall undergo practices and receive instruction as set out in the third part of the third schedule to these regulations, or such other practices and instruction as the Minister may from time to time approve.

(c) A record shall be kept at every Central Rescue Station of all persons undergoing practices or receiving instruction in rescue work at the station. This record shall contain such particulars as the Minister may prescribe, including the date and character of each practice and the condition of each man after the practice, and if anything abnormal is observed in his condition, whether it is due to a defect of the apparatus or to the man himself.

PART V.

RESCUE APPARATUS AND EQUIPMENT.

11.—(a) At every Central Rescue Station and at every mine employing 100 or more persons underground there shall be provided and maintained, in good order and ready for immediate use, apparatus and equipment suitable and sufficient to enable the requirements of these regulations to be carried out. Such apparatus and equipment shall include that specified in the fourth schedule to these regulations and such other necessary apparatus and equipment as the Minister may from time to time prescribe.

(b) The following apparatus and equipment to be provided in pursuance of these regulations shall be of a type or standard approved by the Minister and no such apparatus or equipment being apparatus or equipment of a type or standard not approved by the Minister shall be provided or used at any Central Rescue Station or at any mine—

(a) breathing apparatus ;*

(b) smoke helmets and other apparatus serving the same purpose ;*

(c) electric safety lamps and flame safety lamps ;

(d) first-aid boxes ;†

Any apparatus or equipment approved by the Minister in pursuance of this regulation may be approved either absolutely or subject to conditions.

(c) Subject to any exemption granted under No. 5 of these regulations, breathing apparatus for use at a mine in rescue work or training shall be obtained as required from a Central Rescue Station. It shall not be kept at a mine except with the consent, in writing, of the

* For lists of breathing apparatus and of smoke helmets, etc., approved for use in mines and at Central Rescue Stations, *see* page 251.

† Revoked by General Regulations (First Aid), 1930, in regard to first-aid boxes at *mines*.

inspector of the division, who shall not give his consent unless he is satisfied that the apparatus will be constantly maintained in good condition ready for immediate use, and shall withdraw his consent if the apparatus is not so maintained.

(d) Every breathing apparatus and every flow-meter shall be adjusted and tested periodically, and the purity of oxygen for use in breathing apparatus shall be tested ; in each case in the manner prescribed in the fifth schedule to these regulations, or in such other manner as the Minister may from time to time prescribe.

12.—Where, in or about any mine or at any Central Rescue Station, there is any accident or dangerous occurrence from the use of breathing apparatus or smoke helmets or other apparatus serving the same purpose, notice in writing giving particulars of the accident or dangerous occurrence shall forthwith be sent to the inspector of the division—

(a) if the accident is at a mine, by the manager of the mine ;

(b) if the accident is at a Central Rescue Station, by the superintendent of the station.

PART VI.

ACCOMMODATION AT MINES.

13.—There shall be provided and maintained at every mine to which these regulations apply a suitable room with sufficient accommodation for rescue workers who may engage in rescue work or rescue training and practice at the mine, and for housing such apparatus and equipment as is kept at the mine in pursuance of these regulations.

At mines where the total number of persons employed under ground is 100 or more, the accommodation so provided (unless it is permanently separated from accommodation used for other purposes) shall be so arranged that it can readily be separated whenever required.

The accommodation shall be situated conveniently near the entrance of the mine and shall be provided with ample means of lighting and heating ; it shall be placed under the charge of a responsible person and kept clean and ready for immediate use.

PART VII.

GENERAL.

14.—The owner, agent or manager of every mine affiliated to a Central Rescue Station shall arrange for the superintendent or other responsible officer of the station, accompanied by a responsible official of the mine, to inspect, at least once in every six months, the accommodation, apparatus, and equipment provided at the mine for rescue work, training and practice ; and if on such inspection the superintendent should consider that there is anything defective or lacking, he shall report to the manager of the mine.

15.—There shall be kept at every mine to which these regulations apply, in a form suitable for use by rescue workers, a sufficient number of clear and legible tracings of the workings of the mine up to a date not more than three months previously, showing the ventilation and all principal doors, stoppings and air crossings, regulators and telephone stations, and distinguishing the intake airways by a different colour from the return airways. The signs used in these tracings shall be those specified in the sixth schedule to these regulations.

16.—The code of signals used in rescue work and training shall be the uniform code set out in the seventh schedule to these regulations.

17.—Rules for the conduct and guidance of persons engaged in rescue work shall be adopted at every mine and shall embody the uniform code contained in the eighth schedule to these regulations.

First Schedule (Regulation 6).

SCHEME "A".

Mines Served by Permanent Rescue Corps.

(1) A permanent rescue corps shall be organised and maintained at the Central Rescue Station. Exclusive of the superintendent and of the person appointed to take charge of the station in his absence, the corps shall consist of not less than six fully-trained men.

One or more members shall be trained to act as leaders.

(2) Men from Mines to Act with Permanent Rescue Corps.

The manager of every mine employing 100 or more persons underground and affiliated to the Central Rescue Station shall appoint on the following scale fully-trained men to co-operate with the Central Rescue Station in rescue work and practice—

| | | | |
|---|-----|-----|-------------------------------|
| where the total number of persons employed underground is not more than 500 | ... | ... | not less than 1 trained man ; |
| where the total number of persons employed underground is more than 500 but not more than 1,000 | ... | ... | not less than 2 trained men ; |
| where the total number of persons employed underground is more than 1,000 but not more than 1,500 | ... | ... | not less than 3 trained men ; |
| where the total number of persons employed underground is more than 1,500 | ... | ... | not less than 4 trained men. |

So far as practicable it shall be arranged that the trained men maintained at a mine shall not all be employed underground at the same time.

SCHEME "B".

Mines Served by Rescue Brigades.

(1) Rescue brigades, each consisting of not less than five fully-trained men employed at the mine (one of whom shall act as captain) shall be organised and maintained at each mine on the following scale—

| | | | |
|---|-----|-----|----------------------------|
| where the number of persons employed underground is not more than 500 | ... | ... | not less than 1 brigade ; |
| where the number of persons employed underground is more than 500 but not more than 2,000 | ... | ... | not less than 2 brigades ; |
| where the number of persons employed underground is more than 2,000 | ... | ... | not less than 3 brigades. |

The owner of a mine in which the total number of persons employed underground is less than 100, shall be deemed to have complied with the foregoing provision if he has acquired the right of calling for a brigade from a neighbouring mine through a Central Rescue Station.

(2) A group of mines of which all the shafts or exits for the time being in use in working the mines lie within a circle having a radius of two miles, may, for the purpose of ascertaining the number of brigades required, be treated as one mine.

(3) So far as practicable it shall be arranged that the members of a brigade shall not all be employed underground at the same time.

Second Schedule (Regulation 8).

Part I.—Selection and Qualifications of Rescue Workers.

(1) No person shall be trained as a rescue worker unless—

- (i) he is certified by a duly qualified medical practitioner after thorough examination in accordance with the rules set out in the second part of this schedule to be free from any organic disease or weakness, and to be fit for undertaking rescue work in a mine ; and
- (ii) he is considered by the superintendent of the rescue station and the captain of the brigade to be suitable for rescue work with breathing apparatus ;
and in the case of men hereafter selected
- (iii) he has had two years' working experience underground in a mine ;
and
- (iv) he is the holder of a certificate of proficiency in first aid from one of the Societies or Bodies approved by the Minister*.

Part II.—Rules as to Medical Examination.

The examining doctor shall make a thorough examination of each person to be trained or kept in training and shall devote particular attention to the following requirements—

The person must be free from

- (i) any tendency to fainting or vertigo ;
- (ii) any chronic obstruction in the air passages ;
- (iii) dyspnoea on light exertion ;
- (iv) nystagmus ; any marked degree of myopia or any other serious optical defect or disease ;
- (v) deafness ;

and must be of

- (vi) good physical development and mental alertness, and capable of undergoing hard physical exertion for not less than 15 minutes without being unduly distressed or fatigued.

Third Schedule (Regulations 9 and 10).

INSTRUCTION AND PRACTICE.

Part I.—Appointment of Instructors.

Competent instructors among whom may be included the superintendent of the station and the person appointed to take charge of the station in the absence of the superintendent, shall be employed on the following scale—

- (i) At stations not maintaining a permanent rescue corps.—If the total number of brigades required to be provided at the mines served by the station does not exceed 50, two ; does not exceed 100, three ; exceeds 100, four.

* For list of approved societies and other bodies, see page 237.

- (ii) At stations maintaining a permanent rescue corps.—If the total number of persons employed underground at the mines served by the station does not exceed 15,000, two ; if the number exceeds 15,000, three.

Part II.—Prescribed Course of Instruction and Practices.

The prescribed course of instruction and practices is as follows—

(a) *Instruction* as to—

- (i) the general methods of dealing with underground fires and the recovery of mines after fires and explosions ;
- (ii) the construction, use, repair, maintenance and testing of the type or types provided of breathing apparatus and of smoke helmets or other apparatus serving the same purpose ;
- (iii) the use of methods and apparatus for reviving men ;
- (iv) the properties and detection of the noxious and inflammable gases which may be found in mines ;
- (v) the taking of gas samples in irrespirable atmospheres ;
- (vi) the reading of mine plans ;
- (vii) the requirements contained in the seventh and eighth schedules to these regulations.

(b) *Practices*—not less than 12 for each man with breathing apparatus and in addition not less than two for each man with smoke helmets or other apparatus serving the same purpose, in each case under conditions so devised as to represent those likely to be encountered in underground operations requiring the use of such apparatus.

The practices shall be carried out as follows—

- (i) *Rescue Brigades*.—As far as possible by each brigade as such, *i.e.* by all members of the brigade, at one and the same time.
- (ii) *Permanent Rescue Corps*.—By at least five members at one and the same time.
- (iii) *Men from Mines to act with Permanent Rescue Corps*.—Not more than eight men nor less than five men shall take part in any practice, but if five men do not attend on any occasion the number may be made up by members of the permanent rescue corps. So far as practicable the same five men shall practise together as one brigade.

(c) The practices with breathing apparatus shall take place in ordinary air and shall progress gradually until practices can be carried out in a hot and irrespirable atmosphere.

(d) The practices with breathing apparatus shall comprise the following operations—

- (i) the repeated raising and lowering of a weight of 56 lb. to and from a height of six feet by means of a rope and pulley ;
- (ii) walking continuously at a fair pace for half an hour ;
- (iii) building and removing temporary stoppings of stone, brick, sand-bags, brattice cloth, or other materials, and carrying the materials required for such operations over a distance of at least ten yards ;
- (iv) removing debris in confined spaces as representing the clearing of a fall of roof ;
- (v) setting timber or other roof supports ;
- (vi) carrying, pushing or pulling on a stretcher a live person or dummy body weighing 150 lb. along the length of the gallery, and through an opening two feet high by three feet wide and four yards long ;
- (vii) the rapid establishment of communication.

Part III.—Practices and Instruction after Becoming Efficient.

(a) *Practices.*

Rescue Brigades and Men from Mines to act with Permanent Rescue Corps.—Practices with breathing apparatus at least one in each quarter and at least six in each year, of which at least two shall take place in mines, and the remainder in a hot and irrespirable atmosphere.

Permanent Rescue Corps.—In addition to regular practices at the Central Rescue Station, practices with breathing apparatus underground in a mine at least one in each quarter and at least six in each year. Members who are not employed regularly underground in mines shall have six further practices underground in mines each year, making 12 practices in all.

Where possible mine practices shall include work in low and constricted roadways.

(b) *Instruction.*

Revision of all subjects included in the prescribed course of instruction and practices.

Part IV.—General.

All practices required by this schedule shall last at least two hours except on occasion when, in the opinion of the instructor, it is desirable in the interests of safety to curtail the practice. At some of the practices the breathing apparatus shall be worn continuously for two hours.

Fourth Schedule (Regulation 11).

APPARATUS AND EQUIPMENT.

(a) *Minimum to be kept at Central Rescue Stations.*

- (i) Twenty complete suits of breathing apparatus, with means of supplying sufficient oxygen or liquid air to enable such apparatus to be constantly used for two days, and of charging such apparatus ;
- (ii) Four smoke helmets or other apparatus serving the same purpose with not less than 120 feet of tubing for each ;
- (iii) Twenty electric safety lamps ; and six flame safety lamps ;
- (iv) Four reviving apparatus (not of the forced-breathing type) each with a cylinder or cylinders capable of supplying at least 20 cubic feet of a mixture of carbon dioxide and oxygen which shall contain not less than 5 per cent. and not more than 7 per cent. of carbon dioxide.
- (v) A first-aid box or boxes ;
- (vi) Fresh drinking water ;
- (vii) Cages of small birds for testing for carbon monoxide ;
- (viii) A motor car of adequate capacity and power in constant readiness ;
- (ix) Two portable signalling devices ;
- (x) A Clowes or Oldham gas testing chamber, or some similar apparatus giving facilities to test for inflammable gas.

(b) *Minimum to be kept at every mine employing 100 or more persons underground.*

- (i) One smoke helmet or other apparatus serving the same purpose with not less than 120 feet of tubing ;
- (ii) Two or more small birds for testing for carbon monoxide ;
- (iii) One electric safety lamp and one flame safety lamp for each trained rescue man and each capable of giving light for at least four hours ;
- (iv) One reviving apparatus (not of the forced-breathing type) with a cylinder or cylinders capable of supplying at least 20 cubic feet of a mixture of carbon dioxide and oxygen which shall contain not less than 5 per cent. and not more than 7 per cent. of carbon dioxide ;
- (v) (*Revoked.*)
- (vi) Fresh drinking water.

Fifth Schedule (Regulation 11).

BREATHING APPARATUS : ADJUSTMENT AND TESTS.

(1) In every breathing apparatus which is arranged so as to give a uniform oxygen delivery, the reducing valve shall be so adjusted as to supply not less than two litres of oxygen per minute.

(2) Every breathing apparatus shall be thoroughly tested at least once a month in the following manner, and the results of the test giving such particulars as the Minister may prescribe shall be recorded forthwith in a book to be kept at the Central Rescue Station or the mine as the case may be—

- (i) The apparatus shall be carefully examined in respect of its general condition and particular attention shall be given to any delicate and perishable parts.
- (ii) The apparatus shall be tested for leakage by completely immersing it in water. For the purpose of this test the apparatus shall be fully distended, and if it is a compressed oxygen apparatus the oxygen shall be turned on. The apparatus, immersed in water, shall be well shaken and shall be closely examined in every part for leakage by the superintendent or one of the instructors of the Central Rescue Station, or by the captain of the rescue brigade. If any leakage is observed the apparatus shall be deemed unsafe for use.
This test may be omitted in respect of the pack of a liquid air apparatus in so far as it would be damaged by immersion.
- (iii) The pressure at which any automatic relief valve discharges shall be measured.

The following additional tests shall be applied to compressed oxygen apparatus—

- (iv) The pressure in the oxygen cylinder shall be measured.
- (v) The rate of delivery of oxygen shall be measured by a flow-meter and if that rate is capable of being adjusted by the wearer of the apparatus, it shall be measured over the whole range of adjustment.

(3) Except for practices in fresh air, no breathing apparatus shall be used underground unless immediately before use it has been tested and found safe in the manner prescribed by paragraph (ii) of Clause (2) of this schedule, provided that as a matter of urgency to save life, but not otherwise, this test may be omitted and a test for leakage by mouth suction applied instead.

(4) The oxygen in every cylinder supplied for use in connection with breathing apparatus shall be analysed before being used in a breathing apparatus, and no oxygen which is found to contain more than two per cent. of impurities shall be used. The results of every analysis giving such particulars as the Minister may prescribe shall be recorded forthwith in a book to be kept at the station or mine, as the case may be.

(5) Flow-meters shall be tested for accuracy at least once in every six months, and the results of every test giving such particulars as the Minister may prescribe shall be recorded forthwith in a book to be kept at the station or mine as the case may be.

Sixth Schedule (Regulation 15).

CODE OF SIGNS.

| | |
|--|--|
| Brick, stone or concrete stoppings, explosion proof (No. 91 of the <i>General Regulations</i> of 10 July, 1913) | |
| Brick, stone or concrete stoppings other than the above | |
| Fire dams or seals | |
| Doors | |
| Regulators | |
| Air crossings, explosion proof (<i>Section 42(3), Coal Mines Act, 1911</i>) | |
| Air crossings other than the above | |
| Telephones | |
| Underground ambulance station (<i>in red</i>) | |
| Direction of air current Intake airways—Blue. Return airways—Red ... | |

Seventh Schedule (Regulation 16).

CODE OF SIGNALS.

| Electric Signalling. | Signal. | Signalling between Members of a Brigade. | Signal. |
|--|-----------------|---|-----------------|
| "Distress " or " Help Wanted." | ONE ring. | " Distress " or " Help Wanted." | ONE hoot. |
| (If NO ANSWER is given to a call, " Distress " is to be understood.) | | | |
| " Not understood " or " Repeat the Message." | TWO rings. | Halt | TWO hoots. |
| " No " | THREE rings. | Retire | THREE hoots. |
| " Yes " or " All right " or " All's well." | FOUR rings. | Advance | FOUR hoots. |
| To " ring up." To " ring off." | FIVE rings. | To call attention ... | FIVE hoots. |

Eighth Schedule (Regulation 17).

Uniform Code of Rules for the Conduct and Guidance of Persons
Employed in Rescue Work.

MANAGER OR PRINCIPAL OFFICIAL FOR THE TIME BEING AT THE
SURFACE OF THE MINE.

1. On receiving information of any emergency likely to require the services of a rescue corps or brigade, the following steps shall immediately be taken by the manager, or, in his absence, by the principal official present at the surface—

(a) Telephone to the Central Rescue Station. Inform the responsible officer on duty at the station of the character of the occurrence. State whether assistance will be needed from rescue brigades other than the permanent rescue corps or the brigades attached to the mine ;

(b) Summon the trained men attached to the mine and requisition the smoke helmets or other apparatus serving the same purpose maintained at the mine ;

(c) Telephone for medical assistance ;

(d) Telephone to H.M. Divisional Inspector of Mines and the local offices of the Miners' Union and the Firemen's, Examiners' or Deputies' Association ;

(e) If necessary, communicate with the police station.

2. No person shall be allowed to enter the mine or the part of the mine which is unsafe for the purpose of engaging in rescue operations unless authorised by the manager, or, in his absence, by the principal official of the mine present at the surface ; and, during the progress of such operations, a person or persons shall be stationed at the entrance of the mine, and required to keep a written record of all persons entering and leaving the mine. Only men in training with the apparatus shall be permitted to enter the mine for the purpose of using breathing apparatus.

3. Prior to sending a brigade underground, clear instructions shall be given by the principal official of the mine for the time being on the surface, or by a responsible person deputed by the agent or manager, to the leader of the brigade

as to where it shall go and what it shall attempt. Unless the leader is personally thoroughly familiar with the roadways in question, the route shall be marked on a tracing, which the leader shall take with him into the mine.

4. A duly qualified medical practitioner shall remain in attendance at the mine so long as rescue parties are at work, unless, in the opinion of the manager and of the inspector of mines and miners' representatives (if present), that course is unnecessary.

He shall examine every man engaged in rescue work before permitting him to go underground for a second spell of that work.

5. As soon as possible a base or bases shall be established in fresh air, but as near to the irrespirable zone or zones as safety permits. Each such base shall, if possible, be connected by telephone to the surface or to the shaft bottom. Whenever men are at work beyond the base there shall be stationed at the base as soon as possible the following: (a) Two men, of whom at least one should understand rescue appliances and first aid; (b) A spare brigade with rescue apparatus and ready for immediate service; (c) One or more reviving apparatus, stretchers and birds.

CAPTAIN OR LEADER OF A RESCUE BRIGADE.

6. The leader shall not permit the brigade to go underground until he has received clear instructions from the manager or from the person acting on the manager's behalf; and, unless the leader knows the route thoroughly, he shall take underground a plan on which the route is clearly marked.

7. The leader shall not engage in manual work. He shall give his attention solely to directing the brigade and to maintaining its safety. He shall examine the roof and supports during the journey inbye and, if there is any likelihood of a fall, he shall not proceed until the brigade has made the place secure. He shall not take the brigade through any passage less than two feet high and three feet wide, except in a case of urgent necessity.

8. When the atmosphere is clear, the leader shall, when passing the junction of two or more roads, clearly indicate the route by means of arrow-marks in chalk. When the atmosphere is thick with smoke the leader shall see that a life-line is led in from fresh air, and shall not allow any member of the brigade to move out of reach of that line; or, if that course is impracticable, he shall not proceed until every road branching from the route is fenced across the opening.

9. Before proceeding underground the leader shall test, or witness the testing of, or satisfy himself that tests have been made of, every rescue apparatus of the brigade. He shall check the equipment of his party, and, immediately before entering irrespirable air, make sure that every apparatus is working properly.

10. When using rescue apparatus the leader (who shall carry a watch) shall read the pressure of the compressed oxygen every 20 minutes, or thereabouts, and shall commence the return journey in ample time. In travelling he shall adapt the rate to that of the slowest member.

MEMBERS OF RESCUE BRIGADES.

11. Members of brigades shall, in general, use the prescribed signals in communicating to one another.

12. In travelling with rescue apparatus, each member of the brigade shall keep the place given him when numbering off. If the pace is too quick, or if distress is felt for any reason, the member shall at once call attention to the fact.

13. No person shall commence a second or subsequent spell of work in noxious air without being examined and passed by a duly qualified medical practitioner, if present, or by the rescue station superintendent or other competent person, if a duly qualified medical practitioner be not present.

SEARCH FOR PROHIBITED ARTICLES (SECTION 35(2)).
Order of 1912, No. 510.

[Made in pursuance of Section 35(2) of the Coal Mines Act, 1911.]

PRESCRIBED MANNER OF SEARCH OF PERSONS EMPLOYED BELOW
GROUND FOR PROHIBITED ARTICLES BEFORE COMMENCEMENT OF
WORK.

1.—The search shall be made by a person, or persons, appointed for the purpose in writing by the manager.

2.—In the case of members of a shift the search shall be made in the presence of two or more members of the shift.

3.—The search shall be made with due regard to propriety and so as to occasion the person searched as little inconvenience as possible.

4.—The person conducting the search shall—

- (a) search or turn out all pockets ;
- (b) pass his hands over all clothing ;
- (c) examine any article in the workman's possession.

5.—If the person conducting the search suspects that the person searched is concealing any prohibited article, he shall detain him and as soon as possible refer the matter to the manager, under-manager, or other official authorised by the manager for the purpose, who shall not allow the person to proceed to work until he has satisfied him that he has no prohibited article in his possession.

SHALLOW WORKINGS AND DANGEROUS DEPOSITS
Coal Mines (Shallow Workings and Dangerous Deposits) General
Regulations, 1952, No. 1847.*

1.—The owner, agent and manager of a mine shall from time to time cause all reasonable steps to be taken to ascertain from all available information and evidence whether there is any material below the surface which may so affect any workings being, or about to be, carried on at that mine as to cause danger to persons working therein and shall ensure that the facts so ascertained are in the possession of the manager.

2.—(1) No working which is approaching and within 150 feet of the surface shall be carried on in any mine unless the manager has sufficient information about the nature of the material between the working and the surface to determine whether it may cause danger to persons working in the mine :

Provided that this paragraph shall not apply where there is another working or a disused working vertically above the working at a distance not less than 30 feet or five times the thickness of the seam to be worked, whichever is the greater.

* These regulations come into operation on 15 February, 1953.

(2) No working shall be carried on at any place in any mine if there is evidence that within 150 feet thereof there may be any material which when wet is likely to flow including peat, moss, sand, gravel and silt, unless the manager has sufficient information to determine the nature, position, thickness and extent thereof.

(3) No working shall be carried on at any place in any mine if there is evidence that within 150 feet thereof there may be any rock or stratum likely to contain water (whether dispersed or in natural cavities) unless the manager has sufficient information about the nature or position thereof to determine that it is not dangerous to persons working in the mine, or sufficient information about the nature, position, thickness and extent thereof to determine whether it may cause danger to such persons.

3.—(1) No working which—

- (a) is approaching and within 150 feet of the surface, or
- (b) is within 150 feet of any material described in paragraph (2) of the last preceding regulation, or
- (c) is within 150 feet of any material described in paragraph (3) thereof (other than material which by reason of its nature or position is not dangerous),

shall exceed ten feet in width unless the conditions specified in the following paragraph are satisfied.

(2) The aforesaid conditions are that—

(a) notice of the proposed working has been sent by the owner, agent or manager to the inspector of the division ; and

(b) either—

- (i) the inspector of the division has within one month notified the manager that he has no objection to the proposed working or the proposed working subject to compliance with conditions for ensuring the safety of persons working in the mine, or
- (ii) it has been determined in manner provided by the Act for settling disputes that the proposed working, or the proposed working subject to compliance with conditions for ensuring the safety of persons working in the mine, would not be dangerous to such persons ; and

(c) where any such conditions for ensuring safety are imposed, they are complied with.

4.—No work other than work necessary for the preservation of the mine or for the sinking of shafts or the driving of drifts from the surface shall be carried out in any mine within 60 feet, or (if greater) ten times the maximum height of the working or proposed working, of—

(a) any material described in paragraph (2) of regulation two ;
or
(b) any material described in paragraph (3) thereof (other than material which by reason of its nature or position is not dangerous);
except in accordance with special regulations for the mine.

SUPPORT OF ROOF AND SIDES.

Coal Mines (Support of Roof and Sides) General Regulations, 1947, No. 973.*

1.—(*Amends Section 50(1), (2), (3), (4), and (7) and Section 75 of the Coal Mines Act, 1911—see pages 22 and 29.*)

2.—(1) Every prop used as a roof or side support shall be set securely and on a proper foundation, and whenever it becomes broken or unstable shall, as soon as practicable, be replaced or made stable.

(2) Every prop set in a face working or in a roadhead, unless set under a wooden bar or for the express purpose of inducing a roof break, shall have, between its top and the roof or bar above it, a suitable wooden lid of adequate thickness and of sufficient size to cover at least the whole of the end of the prop :

Provided that the inspector of the division—

(a) may exempt any mine, or part of a mine, from the application of the provisions of this paragraph if he is satisfied that the use of such lids is unnecessary ;

(b) may require lids to be set under wooden bars if and in so far as he is of opinion that it is necessary in the interests of safety.

3.—Every chock which forms part of a system of support shall be well built on the natural floor, and shall be made tight to the roof ; no round pieces of material shall be used as members, except in chocks which are to be left in the packs or waste.

4.—The walls of every pack which forms part of a system of support shall be well built on the natural floor ; and the pack shall be filled with debris and made as tight to the roof as practicable over its whole area.

5.—(1) Bars shall be used to support the roof in all face workings where machinery is used for cutting, conveying or loading. Such bars shall be set systematically at such regular intervals and in such manner as is specified by the manager in the Support Rules ; and shall be supported as effectively as possible by at least two supports.

Such bars and supports shall be set throughout the length and over the whole width of the face working except in so far as it is impracticable to set bars in the path of travel of an overcutting machine or is necessary to remove supports from the path of travel of machinery used for cutting or loading.

* For definitions of certain terms used, see page 22.

(2) The Chief Inspector of Mines or the inspector of the division may exempt any mine, or part of a mine, from the application of the provisions of the preceding paragraph if he is satisfied that either the natural conditions of the workings or the method of work in use makes compliance therewith inexpedient or ineffective.

6.—(1) The roof and wherever necessary the sides of every roadhead shall be systematically and adequately supported by setting supports, in addition to the packs (if any), at such regular intervals and in such manner as is specified by the manager in the Support Rules.

(2) The roof of the roadhead or, in a case in which there is any roof ripping, that part of the roadhead between the face and the roof ripping farthest from the face, shall be supported over the whole width by rows either of bars or of bars and crossbars. Either the bars, or the crossbars, in each row shall be set not more than four feet apart ; so however that bars, and crossbars if used, may be set in such manner and at such distances apart as the inspector of the division authorises in writing.

Where there are any roof rippings within the roadhead, a bar or bars shall be set as near as practicable to each ripping lip extending across the whole width of the ripping.

(3) Each bar in relation to its length and the span between its supports shall be of adequate strength and shall be kept supported by supports of proportionate strength and in such a manner as to ensure its stability.

(4) The face or faces of every roof ripping within a roadhead shall be supported by sprags or other effective supports.

(5) At any roof ripping, suitable temporary supports specially provided for the purpose shall be set as soon as reasonably practicable to secure the newly exposed roof.

7.—Wherever roof supports are removed in order to advance or turn a machine, or to make room for it, long bars shall be used for the purpose of supporting the roof at that place, and there shall never be less than two props to each of such bars :

Provided that if an overcutting machine is used, having a jib that cannot be lowered to permit of long bars being used, and in any other circumstances in which the manager satisfies the inspector of the division that it is impracticable to use long bars, other temporary supports shall be set which will serve the same purpose so far as practicable.

Any dispute between the manager and the inspector of the division as to whether or not it is practicable to use long bars shall be settled in manner provided by the Act for settling disputes.

8.—When a fall of roof or side involving the displacement or breakage of supports has occurred in any place where any person has to work or pass, any newly-exposed roof or sides shall at once—

(a) be dressed, if necessary ; and

(b) be secured by supports ;

before the work of clearing any debris, other than such work as is necessary to set supports, is begun.

9.—(1) If coal or any other mineral or stone is to be got from the waste, the roof under which any person is to work for that purpose shall be adequately supported ; and if it is to be got by roof ripping in an advancing place other than a road or a roadhead—

(a) a bar or bars shall be set as near as practicable to each ripping lip, extending across the whole width of the ripping, and shall be supported as effectively as possible by at least two supports ;

(b) the face of the ripping shall be supported by sprags or other effective supports ;

(c) suitable temporary supports provided for the purpose shall be set as soon as reasonably practicable to secure the roof newly exposed by the rippings.

(2) Supports shall not be withdrawn from under the roof adjoining the waste otherwise than by means of a device or method enabling such withdrawal to be carried out from a safe position.

(3) Where it is part of the system of work to withdraw supports from the waste or from under the roof adjoining the waste such supports shall be withdrawn in accordance with the system specified in the Support Rules ; and supports shall be set and maintained at the intervals specified in such Rules with a view to preventing the roof breaking down over the face working or in any place other than in the waste.

10.—The provisions of these regulations shall not apply—

(a) to any mine of stratified ironstone in the Cleveland district ;

(b) to any mine of thick coal in the South Staffordshire district ;

(c) to any mine in any other district if the Minister is satisfied that the conditions of the workings in such mine are similar to those conditions in mines in the Cleveland or South Staffordshire district and directs that such provisions shall not apply.

11.—The Chief Inspector of Mines may, except in any case in which provision is made by these regulations (other than by Regulation 5) for exemption being granted by the inspector of the division, exempt any mine or part thereof or any specified class or description of mines from the application of the provisions of these regulations, or any of them, if he is satisfied that compliance therewith is inappropriate or not reasonably practicable in the circumstances of the case.

12.—The provisions of Section 119 of the Act shall apply to any direction given by the Minister, and to any exemption granted by the Chief Inspector of Mines, and to any authorisation and direction given and requirement made by the inspector of the division, under these regulations as they apply to any exemption granted by the inspector of a division.

SURVEYORS AND PLANS (SECTIONS 20 AND 21)
Coal Mines (Surveyors and Plans) General Regulations, 1952,
No. 1846

PART I

APPOINTMENT, QUALIFICATIONS AND DUTIES OF SURVEYORS

1.—(1) For every mine there shall be appointed by the owner in writing a surveyor who shall be responsible for the preparation of any plans, drawings and sections of the mine required by Sections 20 and 21 of the Act and Regulation 4 of these regulations in accordance with those provisions.

(2) On the appointment of a person to be the surveyor for a mine, the owner shall send to the inspector of the division notice in writing of the name and address of that person, and the number of the surveyor's certificate granted to him.

2.—(1) No person shall be qualified to be appointed or to be the surveyor for a mine, not being a small mine or mine of fire-clay, unless—

(a) he is the holder of a surveyor's certificate ; and

(b) he has had not less than three years' experience in work relating to surveys of mines, including making mine surveys and preparing plans and sections of mines therefrom, since the grant to him of that certificate.

(2) No person shall be qualified to be appointed or to be the surveyor for a small mine or mine of fire-clay unless he is the holder of a surveyor's certificate.

(3) (*Amends Section 9 (1) of the Coal Mines Act, 1911—see page 7.*)

(4) In these regulations " surveyor's certificate " means—

(a) a certificate granted by the Minister after receipt of a report by the Mining Qualifications Board that the applicant possesses the requisite qualifications for such a certificate and is at least 21 years of age ; or

(b) a certificate which was in force immediately before 15 December, 1952, and which was or was deemed to be a certificate granted under the Coal Mines (Prescription of Qualifications of Surveyors) Order, 1942.

3.—The provisions of Sections 11 and 12 of the Act (which relate to inquiries into the competency of holders of certificates and to the cancellation and suspension of certificates) shall apply in relation to a surveyor and surveyor's certificate, and accordingly those sections shall have effect subject to the variation that references therein to managers and to certificates of competency shall be deemed to include references to surveyors and surveyors' certificates respectively.

PART II

PLANS AND SECTIONS TO BE KEPT AT MINES

4.—(1) In the case of any mine, plans and sections of the workings of which are made after 15 *December*, 1952, and in the case of any mine after 31 *December*, 1962, the plans, drawings and sections to be kept in the office at the mine shall comply with the requirements of this regulation, and accordingly at the beginning of subsection (1) of Section 20 of the Act there shall be insetted the words—

“ Subject to the provisions of any general regulations made under this Act,”.

(2) The plans and sections of the workings to be kept as aforesaid are—

(a) a separate plan for each seam being worked in the mine showing at any time clearly and accurately the workings in that seam, and all stone drifts or staple pits driven from or to it, up to a date not more than three months past and up to a point not more than 100 yards from their actual positions at any time ;

(b) in respect of mines other than mines of stratified ironstone, such sections of the seams being worked in the mine as may be necessary to show any substantial variation in the thickness or character thereof, and so far as practicable such sections of the strata sunk or driven through in the mine or proved by boring as may be necessary to enable the relation between those seams to be determined at any place in the mine ;

(c) in respect of mines of stratified ironstone, a section of the strata sunk or driven through or, if that is not practicable, sections of the seams being worked in the mine, and in any case any additional sections of the seams that may be necessary to show any substantial variation in the thickness or character thereof.

(3) A separate plan for each seam shall not be required where an exemption is granted by the inspector of the division on account of the special circumstances of the mine, so long as the workings in each seam are clearly distinguished by the use of different colours or otherwise.

(4) Plans and sections kept under this regulation in respect of any mine shall be in such form, conform to such standards and record such information as to orientation, contours, boundaries, other workings, faults or other features as are specified in rules* made by the Minister in relation to mines of that class or description, and such rules may provide for the making of supplementary plans and drawings, where necessary to show the required information fully and clearly.

(5) The provisions of subsections (3), (4) and (5) of Section 20 of the Act shall apply to the plans, drawings and sections of the workings kept under this regulation as if they were kept under that section and as if references to the particulars required to be shown were the particulars required under these regulations.

* See page 161.

5.—(1) The plans of the workings of any mine to be kept under subsection (1) of Section 20 of the Act or under the last preceding regulation shall record so far as practicable—

(a) the position of any disused workings or any abandoned workings within, or not more than 125 yards outside, the boundary of the mine ; and

(b) the position of any workings not more than 125 yards outside the boundary of the mine up to a date not more than three months past ;

being in either case workings which are, or are likely at any stage of the working to be, at a depth differing from the depth of the workings to which the plans relate by not more than 40 yards, or which are likely at any time to contain an accumulation of water dangerous to the workings to which the plans relate.

(2) If there is any evidence that within 150 feet of any working in any mine there may be—

(a) any material which when wet is likely to flow, including peat, moss, sand, gravel and silt ; or

(b) any rock or stratum likely to contain water (whether dispersed or in natural cavities) which might constitute a danger to persons in the mine ;

the said plans shall record the nature, position, thickness and extent thereof as accurately as possible, and shall also record such particulars, so far as they are available, of any such material, rock or stratum within or not more than 125 yards outside, the boundary of the mine.

6. } —(*Amend Section 20 (2) of the Coal Mines Act, 1911—see page 14.*)
7. }

8.—(*Amends Section 20 (3) of the Coal Mines Act, 1911—see page 14.*)

9.—(1) If it appears to the inspector of the division that information which ought to be shown on a plan, drawing or section of the workings of a mine required to be kept by virtue of Section 20 of the Act or Regulation 4 of these regulations cannot for any reason be shown fully and clearly, he may by notice sent to the manager of that mine consent to or require the keeping of supplementary plans, drawings or sections specified in the notice, being plans, drawings or sections necessary to show that information fully and clearly.

(2) Any dispute between the inspector and the manager whether the keeping of such supplementary plans, drawings or sections is necessary shall be determined in manner provided under the Act for settling disputes.

(3) Any plans, drawings or sections required to be kept in pursuance of this regulation shall be deemed to be part of the plans and sections required to be kept by virtue of Section 20 or Regulation 4, as the case may be.

10.—All plans, drawings and sections of a mine required to be kept by virtue of Section 20 of the Act or of these regulations shall be prepared by or under the supervision of the surveyor for that mine, and the accuracy, as regards any matters which may involve substantial error or danger, of any plans, drawings or sections which have not been prepared by him shall be established by him or a person who is qualified to be appointed the surveyor for that mine.

11.—(1) The owner, agent and manager of any mine shall make available to the surveyor for that or another mine all such information and facilities as he may require to enable him to prepare the plans, drawings and sections of the mine required by the Act and these regulations.

(2) Without prejudice to the generality of paragraph (1) of this regulation the manager of any mine shall forthwith inform in writing the surveyor of that mine when any working becomes disused.

12.—(1) The surveyor for any mine shall ensure that working papers recording all observations or calculations which were necessarily made for the preparation or checking of any plans, drawings or sections of the mine are signed by the person making them and are preserved and shall on request at any time of an inspector produce them to him.

(2) When any person ceases to be a surveyor for a mine any working papers referred to in the last preceding paragraph held by him shall be transferred to the owner or the person appointed in his place.

PART III

PLANS OF ABANDONED MINES

13.—(*Amends Section 21 (1), (2) and (3) of the Coal Mines Act, 1911—see page 15.*)

14.—(*Amends Section 21 (5) of the Coal Mines Act, 1911—see page 16.*)

15.—(*Amends Section 21 (7) of the Coal Mines Act, 1911—see page 16.*)

16.—Where any mine is abandoned the person who is the owner of the mine at the time of its abandonment shall send to the Minister with the plans, drawings and sections required to be sent by Section 21 of the Act any working papers required to be preserved under Regulation 12 hereof relating to that mine, or certified copies thereof.

Coal Mines (Plans) Rules, 1952, No. 2127.

1.—(1) The plan of the workings of any seam in a mine kept under Regulation 4 of the regulations shall comply with the following requirements.

(2) The plan shall be orientated to and correlated with the Ordnance Survey National Grid and marked with squares corresponding to the kilometre squares shown on Ordnance Survey sheets on the 1 : 2500 scale.

(3) The plan shall indicate variations in level from an assumed datum 10,000 feet below Ordnance Datum on—

(a) the haulage roads, main airways and other principal roads of the workings ;

(b) the outline of any disused or abandoned workings shown on the plan (so far as they can be ascertained) ;

at horizontal intervals not exceeding 300 feet, and at any such intermediate points as are necessary to indicate any substantial change in gradient within such an interval.

(4) The plan shall, so far as their position can be ascertained be marked with contour lines indicating the depth of the floor of the seam relative to the assumed datum 10,000 feet below Ordnance Datum as follows, that is to say—

(a) if the gradient of the seam at no place exceeds 1 : 3, such lines shall show vertical variations at intervals not exceeding 50 feet ;

(b) if the gradient of the seam exceeds 1 : 3 at any place, such lines shall show vertical variations of multiples of ten feet not less than 50 feet nor more than 150 feet.

In any case the vertical variation represented by any consecutive contour lines shall be the same throughout the plan, and the lines shall be marked with the depth relative to the assumed datum.

(5) In the case of any working where the level of the floor of the seam does not change by more than 50 feet on the plan, the plan shall show the direction and rate of dip of the seam.

(6) The plan shall show the position, direction, extent and vertical throw (so far as they can be ascertained) of any known fault or other displacement of the seam and any known washout, roll, igneous intrusion or mineral vein affecting the seam.

(7) The plan shall show, so far as they can be ascertained, the position and the dimensions of any water dam which may affect workings in the seam.

(8) The plan shall show, so far as they can be ascertained, the position of and the level at the top and bottom of every shaft, staple pit or drift giving access to the seam and the level of any inset giving access thereto.

(9) The plan shall show, so far as they can be ascertained, the position and the level at the top and bottom of every borehole sunk from or driven to the surface, or from one seam to another, which may affect the workings to which the plan relates.

(10) The plan shall show the boundaries to which it is intended to work in the seam.

(11) The plan shall show sufficient surface features to facilitate identification of the position of the workings with regard to the surface.

(12) The plan shall indicate—

- (a) the direction of the National Grid North ;
- (b) the assumed datum level ; and
- (c) the date on which it was commenced.

2.—Where any mine or seam is abandoned there shall be included on the plans sent to the Minister in pursuance of Section 21 of the Act the following information as at the date of abandonment (so far as it can be ascertained)—

- (a) the position of all workings ;
- (b) the position of any pump in use below ground with details of the quantity of water being pumped by it ;
- (c) any variations in level on the boundaries of workings shown on the plan ;
- (d) the position and extent of any known waterlogged area ;
- (e) the position of any water dam and, so far as practicable, its dimensions ; and
- (f) details of the construction of any water dam and of the pressure of water being retained by it.

TELEPHONES AND SIGNALLING APPARATUS.

Coal Mines General Regulations, 1938, No. 797, Part III.*

8.—(a) If any part of a circuit containing electrical apparatus for signalling or communication (hereinafter called apparatus) is installed in a seam or any part of a seam in which safety lamps are required to be used, all the apparatus throughout the seam (other than apparatus used solely to control the raising and lowering of cages in shafts) shall be of a type or types approved by the Minister as regards safety in respect to inflammable gas.

(b) In respect of any type or types of apparatus, or generally the Minister may give his approval subject to such conditions as regards manufacture, installation and use as may be prescribed to ensure safety.

(c) No apparatus which is not of approved type shall be connected to a circuit in which apparatus of approved type is required to be used, except only that telephones of approved type used throughout one seam may be connected through the medium of a coupling unit, of a type approved for the purpose by the Minister, to telephones not of approved type on the surface or lawfully in use in any other seam which is separately worked.

* Part I of these Regulations relates to Fire-fighting (*see* page 105) ; the provisions of Part II have been revoked.

Telephone and Signalling Apparatus Order, 1938, No. 1407.

[Made in pursuance of No. 8 of the Coal Mines General Regulations, 1938.]

1.—Subject to compliance with the following conditions as regards manufacture, installation and use, the following types of electrical apparatus (hereinafter called apparatus) shall be deemed to be apparatus of an approved type for the purpose of No. 8 of the Coal Mines General Regulations, 1938—

(a) any type of apparatus for signalling or communication which is certified by the Minister ;

(b) any contact-maker which complies with the requirements of No. 134 of the Coal Mines General Regulations of 10 July, 1913 ;

(c) any type of coupling unit which is certified by the Minister for the purpose of connecting telephones of an approved type with telephones not of an approved type.

2.—The apparatus shall be constructed so as to conform in all respects with the certificate and with the drawings and specifications appended thereto ; and shall be used only for the purpose or purposes for which it is certified. No alteration shall be made in the apparatus except such alteration (if any) as is permitted by a subsequent certificate.

3.—(a) No repair or adjustment of the apparatus shall be made such as to alter any of its electrical characteristics.

(b) No part of the apparatus which affects any of its electrical characteristics shall be replaced except by means of an identical part obtained from the manufacturer of the apparatus.

4.—The source of current to be used for operating apparatus shall be as follows—

(a) for direct current signalling, a battery of 3-pint porous-pot Leclanche cells connected in simple series, or such other source of current as may be certified for the purpose by the Minister ;

(b) for alternate current signalling, a transformer of a type certified for the purpose by the Minister ;

(c) for magneto-call telephones, the generator included in the certified apparatus.

5.—The circuits comprising apparatus shall be arranged as follows—

(a) no part of the circuit shall be connected to earth ;

(b) circuits supplied with current from different sources shall not be interconnected, except that it shall be permissible to use the same line wires for the calling and speaking circuits of telephones ;

(c) direct-current bells or relays when connected in parallel shall be supplied from a single source of current ;

(d) direct-current bells or relays when connected in series shall be supplied either from a single source of current, or from two identical sources of current connected in opposition ;

(e) magneto-call telephones shall be connected in parallel ;

(f) where magneto-call telephones of different types are connected in the same circuit, each instrument shall include a condenser of the type certified for the purpose and connected in shunt with the calling bell.

TRAINING.

Coal Mines (Training) General Regulations, 1945, No. 1217.*

1.†—No person shall be employed in or about a mine on any work on which he has not been employed before *1 January, 1947*, except under competent instruction and supervision, unless and until he has been adequately trained and is competent to do the work without supervision.

2.‡—Without prejudice to the generality of the provisions of the preceding regulation, no person who has not been employed on work below ground in a mine to which the provisions of either the Coal Mines Act, 1911, or the Metalliferous Mines Regulation Act, 1872, apply, shall be employed in a coal mine on work below ground until—

(a) such person has been employed about a coal mine on work above ground for at least such period as is necessary to enable him to receive training as mentioned in the next following regulation ;

* These regulations apply to every mine in which coal is worked. For definition of certain expressions used *see* Regulation 17.

† Students from recognized universities and training establishments outside the United Kingdom, having had not less than four months' practical experience below ground in mines abroad and having a working knowledge of the English language to the satisfaction of the manager, are exempt from the requirements of Regulations 1, 2 and 3. Such a student must, however, spend the first 20 days below ground under the close personal supervision of an instructor or supervising workman, and must not be employed at the coal face until he has been employed for at least 80 days on work below ground in mines in the United Kingdom and has otherwise satisfied Regulation 4.

‡ (1) Persons studying for an approved diploma or degree at an institution or university as mentioned in Section 9(6) of the Coal Mines Act, 1911, and the employers of such persons, are exempted from the requirements in Regulations 2 and 3, subject to the condition that every such person shall, before being employed in a coal mine on work below ground, have first spent not less than 20 working days below ground in a coal mine in receiving practical instruction in mining operations under the close personal supervision of an official of the mine or an instructor or supervising workman.

(2) All persons, and the employers of such persons, employed in or about any mine in respect of which the National Coal Board have granted a licence under Section 36(2) (b) of the Coal Industry Nationalisation Act, 1946, on the ground that coal present amongst other minerals thereat is of so small value that the working thereof is unlikely to be undertaken otherwise than ancillary to the working of those other minerals, are exempted from the requirements in Regulations 2 to 11 (both inclusive).

(b) such person has received such training during the period immediately preceding, as near as may be, the day on which he is first employed on work in a coal mine below ground ; and

(c) there has been issued by a training officer appointed under these regulations a certificate (in the prescribed form)* that such person has duly received such training.

3.†—Except as otherwise provided in a scheme approved by the Minister in pursuance of Regulation 10 of these regulations, or in an exemption granted by the Minister in pursuance of Regulation 16 of these regulations—

(i) the training referred to in the preceding regulation shall comprise adequate instruction in safe and efficient methods of work below ground and suitable physical training, given under and in accordance with a scheme approved by the Minister as aforesaid ;

(ii) all such training as aforesaid shall be given in the course of the normal working hours (excluding overtime) during which the person being trained can lawfully be employed in or about a mine ;

(iii) at least 264 hours shall be spent in such training as aforesaid, of which at least 132 hours shall be spent in practical instruction in and demonstrations of mining operations and at least 132 hours in attending classes in subjects relating to mining operations and other subjects of educational value and in physical training ;

at least 66 hours of the time spent in practical instruction in and demonstrations of mining operations as aforesaid shall be spent in such instruction and demonstrations below ground in a suitable part of a mine ; such instruction shall be given only at a place specified for the purpose in the relevant scheme approved by the Minister as aforesaid ;

in reckoning such hours as aforesaid there shall be excluded the times properly and reasonably spent (whether above or below ground) at meals and in travelling ;

(iv) in the case of any person who has not attained the age of 16½ years on the day on which he first receives any training as required by these Regulations, the training shall be spread as evenly as is practicable over a period of six months.

* M. & Q. Form No. 132.

† Any person who has attained the age of 18 years, and the employer of any such person, is exempted from the requirement that his training shall comprise the matters and the numbers of hours specified in this paragraph. He must instead, during a period of not less than three weeks, receive training in pursuance of the regulations comprising at least 112 hours, including at least 76 hours spent in practical instruction in, and demonstrations of, mining operations, and at least 30 hours spent in talks and discussions concerning subjects relating to mining operations. It is not necessary to submit schemes in respect of such training. The present exemption is due to expire on 31 December, 1953, but is under review.

4.—(1) Without prejudice to the generality of the provisions of Regulation 1 of these regulations, no person who has not been employed on work at the coal face shall be employed, otherwise than at a training face, on such work until—

(a) such person has been employed for at least 80 working days on work below ground in a coal mine ;

(b) such person has spent at least 60 working days (whether or not part of such 80 working days as aforesaid) under the close personal supervision of an instructor or supervising workman in training (which shall comprise adequate instruction and practical training) at a training face in performing safely and efficiently one or more of the following operations, that is to say—

- (i) the getting of coal, including the filling or loading of coal for removal from the coal face ;
- (ii) the building of packs or the withdrawal of supports from the waste, or, in a case in which packs are built and supports withdrawn from the waste in the mine in which such person is to be so employed, the building of packs and the withdrawal of supports from the waste ;
- (iii) the ripping of the roof or floor, including the building of roadside packs in a case in which such packs are built in the mine in which such person is to be so employed ;
- (iv) the shifting of mechanical conveyors and gate-end loaders ;
- (v) the use of machines for cutting coal or for getting and loading coal :

provided that in a case in which a person is receiving such training in more than one of such operations the said minimum period of 60 working days shall be increased by 20 working days for each of such additional operations ; and

(c) there has been issued by a training officer appointed under these regulations a certificate (in the prescribed form)* that such person has duly received such training as aforesaid and is competent to be employed at the coal face ;

† so however that in the case of any mine in which the working is wholly by the method known as longwall and less than five persons are at any

* M. & Q. Form No. 133.

† An exemption provides that not more than 24 persons in all may be trained at part-production longwall faces in a mine worked wholly or partly by the long, wall method. The number of persons being trained is limited to four on any one part-production face and the number of such faces must not exceed six. The total number of juveniles being trained at any one time throughout the mine must not exceed four. For adults only (i.e. persons who have attained the age of 18 years) the minimum periods of experience and training are the same as those required for training at a fully reserved face, but in the case of juveniles the periods are increased in accordance with the terms of the regulation. Schemes for training on part-production faces are not required to be submitted to the Minister for approval, but the situation of all such faces must be notified to the inspector of the division before being used for training. This exemption is due to expire on 31 December, 1953, but is under review.

one time being trained as aforesaid, such practical training may be carried out at a part of a coal-production face set aside for training purposes (which part shall, for the purposes of these regulations, be deemed to be a training face) ; and in relation to every such case the provisions of this paragraph shall have effect subject to the following modifications—

(i) for the words “ 80 working days ” in sub-paragraphs (a) and (b) there shall be substituted the words “ 110 working days ” ;

(ii) the period to be spent in receiving training as specified in sub-paragraph (b) shall be increased by one half, as applicable ; and

(iii) the quantity of the work assigned to be done during every period of employment jointly by a supervising workman and a person under training whom he is supervising shall not be more than they can reasonably do, having regard to the requisite attention which must be given to training and to the experience of the person under training.

(2) Every person receiving training shall be given adequate instruction in the use of all tools, appliances and materials necessary for performing safely and efficiently the operation in which training is being given and in the methods of safely and efficiently performing the operation in respect of which he is receiving training.

(3) References in this regulation to any operation shall be construed as including references to all such subsidiary and incidental work as is normally carried out in connection therewith in the mine in which the person is to be employed as aforesaid.

5.—(1) Without prejudice to the generality of the provisions of Regulation 1 of these regulations, the supervision to be provided in pursuance of that regulation—

(a) for a person who has not been employed on work below ground in a mine to which the provisions of either the Coal Mines Act, 1911, or the Metalliferous Mines Regulation Act, 1872, apply and who is employed in a coal mine on work below ground otherwise than at the coal face, shall, during at least the first 20 working days of his employment below ground, be the close personal supervision of an instructor or supervising workman ;

(b) for a person who is employed at the coal face on any of the operations specified in sub-paragraph (b) of paragraph (1) of the last preceding regulation on which he has not had the minimum training mentioned in that paragraph, shall be the close personal supervision for at least 40* working days of an instructor or supervising workman.

* An exemption provides that the manager, after consultation with the training officer, may terminate the supervision before 40 days have elapsed if he considers that further supervision is not necessary. This exemption is due to expire on 31 December, 1953, but is under review.

(2) The instructor or supervising workman who is to give the supervision mentioned in paragraph (1) of this regulation shall be designated by name, either before or within four days after beginning to give the supervision, by the manager of the mine or a training officer appointed under these regulations and given written notification (in the prescribed form)† by him of the person to be supervised and the work in which he is to be supervised; provided that during the temporary absence for a period not exceeding three consecutive working days of any instructor or supervising workman designated to supervise any person, his duties may be performed by some other instructor or supervising workman, in which case the training officer shall as soon as is reasonably practicable be notified of the name of such other instructor or supervising workman. If the absence of such instructor or supervising workman exceeds that period some other instructor or supervising workman shall be designated to give such supervision and shall be given such notification as aforesaid.

(3) The designation of any instructor or supervising workman to give the supervision mentioned in paragraph (1) of this regulation may at any time be rescinded by the manager of the mine or a training officer appointed under these regulations, in which case another instructor or supervising workman shall be designated to give the supervision and the provisions of paragraph (2) of this regulation shall apply in respect of such designation.

(4) Except with the written permission of an inspector of mines, no instructor or supervising workman shall give the supervision mentioned in paragraph (1) of this regulation to more than one person at the same time; if such permission is refused the owner, agent or manager of the mine in which such supervision is being given may appeal to the Chief Inspector of Mines, who may either refuse or grant permission as he thinks fit.

Any permission granted under the provisions of this paragraph may be granted subject to such conditions (if any) as the inspector or, as the case may be, the Chief Inspector thinks fit, and may be revoked or from time to time varied by an inspector of mines or by the Chief Inspector.

6.—Nothing in Regulation 2 of these regulations shall prevent a person being taken below ground for visits or demonstrations for training purposes, or for the purpose of being trained below ground at a place specified for the purpose of giving the instruction mentioned in Regulation 3 of these regulations in the relevant scheme approved by the Minister in pursuance of Regulation 10 of these regulations; and nothing in Regulations 2, 4 and 5 of these regulations shall affect the employment of any person as an official of a mine, or as a mechanic, electrician or other tradesman, or horse-keeper, or the employment of a person solely in surveying or measuring.

7.—(*Temporary provision now lapsed.*)

† M. & Q. Form No. 134.

8.—(1) A copy of every such certificate as is mentioned in paragraph (c) of Regulation 2 of these regulations and sub-paragraph (c) of paragraph (1) of Regulation 4 of these regulations shall (unless an inspector of mines otherwise in writing permits) be kept at the mine at which for the time being the person to whom it relates is employed and shall be so kept for as long as such person is employed there and, subject to the provisions of paragraph (3) of this regulation, for at least 12 months after he has ceased to be so employed.

(2) A copy of every such notification as is mentioned in Regulation 5 of these regulations shall be kept at the mine at which the instructor or supervising workman designated therein to give supervision is employed and shall be so kept for a period of at least 12 months from the day on which it was given.

(3) If any person to whom a certificate relates ceases to be employed at a mine or at any other mine in the same ownership, the mine owner of any other mine at which such person is next thereafter employed shall forthwith give notice of such employment to the mine owner of the mine at which he was lastly employed who shall forthwith send to such mine owner a copy of the certificate relating to such person if it is in his possession.

(4) Every such certificate and notification and every copy thereof kept at the mine as aforesaid shall be produced at any time on demand to an inspector of mines.

9.—In any proceedings in respect of the alleged employment of a person on any work in contravention of any of the provisions of the preceding regulations it shall be a defence to prove—

(i) that the person in question was so employed for the purpose of saving life or otherwise dealing with the results of an accident ;
or

(ii) that his being so employed was urgently required, owing to unforeseen circumstances, in order to prevent serious interference with the safe working of the mine, and that he had such general experience and qualifications as made him suitable for employment in the work in question.

10.—(1) Before any person who in pursuance of these regulations is required to receive any training as specified in these regulations receives such training, or any part thereof, there shall have been submitted (after consultation with the appropriate local education authority in respect of the subjects in which attendance at classes is required and the conduct of such classes and in respect of physical training) to the Minister for his approval a scheme in relation to the mine in or about which such person is employed setting out particulars of the manner in which such training requirements will be carried out ; and no such training shall be given (or, if it is given, shall not be regarded as training for the purposes of these regulations) except in accordance

with the provisions of a scheme approved by the Minister (which as originally approved or subsequently varied in accordance with the provisions of this regulation is referred to in this regulation as an "approved scheme").

(2) Without prejudice to the generality of the provisions of the preceding paragraph of this regulation, every scheme shall specify detailed particulars of—

(i) the subject matter of and the time to be allocated to the class work, the practical instruction and the physical training required to be given in pursuance of these regulations before a person is employed in a mine on work below ground ;

(ii) where and at what times each kind of training is to be given, and the nature of the accommodation and equipment to be provided ;

(iii) the nature of the arrangements to be made which will secure adequate correlation between the class work and the practical training ; and

(iv) the arrangements for training persons for work at the coal face.

(3) The Minister may at any time revoke his approval of a scheme.

(4) An approved scheme may at any time, with the approval of the Minister, be varied ; and the Minister may at any time require an approved scheme to be varied as may be specified in the requirement.

(5) A scheme approved by the Minister and variations thereof approved by the Minister or specified in a requirement given by the Minister shall come into force on such day as the Minister shall specify in relation thereto ; and an approved scheme shall remain in force unless and until the Minister revokes his approval thereof.

11.—*Temporary provision now lapsed.*

12.—The owner, agent or manager of every mine at which any person who is required by or under these regulations to receive training or supervision, or both, is employed shall make adequate arrangements for every such person to receive the requisite training or supervision, or both, and shall require him to receive it.

13.—(1) The owner, agent or manager of every mine at which any person who is required by or under these regulations to receive training is employed shall keep or cause to be kept a record in respect of each such person showing in relation to each of the matters mentioned in paragraph (iii) of Regulation 3 of these regulations the dates on which any such training was given to the person to whom the record relates and the number of hours occupied in such training on each of those dates.

(2) Every such record as aforesaid shall be kept at the mine at which the person to whom it relates is employed or, in a case in which the mine is not a large coal mine (as defined in Regulation 14

of these regulations) and is not the only mine comprising the undertaking, at such place as may from time to time be approved by the inspector of mines for the division in which the mine is situate ; and every such record shall be kept at such mine or place, as the case may be, for a period of at least 12 months from the day on which the training to which it relates was duly completed.

(3) Every such record as aforesaid shall be produced at any time on demand to an inspector of mines.

14.—(1) Every person who carries on an undertaking comprising one or more mines shall, in accordance with the following provisions of this regulation, appoint in writing, and keep appointed, a training officer or training officers to superintend the carrying out of the foregoing provisions of these regulations in relation to the undertaking and shall notify in writing every such appointment to the Minister.

(2) If the undertaking comprises a coal mine in or about which more than 1,000 persons are normally employed (in this regulation referred to as a “ large coal mine ”) or two or more large coal mines, a full-time training officer shall be appointed for each such mine comprised in the undertaking.

(3) If the undertaking comprises both one or more large coal mines and also one or more other coal mines, in addition to the training officer appointed for each large coal mine a training officer shall be appointed for the other mine or mines and, if the number of persons normally employed in the undertaking in coal mining, excluding persons so employed in or about any large coal mines, exceeds 1,000, that training officer shall be a full-time officer.

(4) If the undertaking does not comprise any large coal mines, one training officer shall be appointed for the undertaking, and, if the number of persons normally employed in the undertaking in coal mining exceeds 1,000, he shall be a full-time officer.

(5) Where it appears to the Minister that, having regard to the special circumstances of any undertaking, it is expedient so to do, the Minister may require—

(a) that one or more training officers, whether full-time or part-time, shall be appointed in addition to those required by the foregoing provisions of this regulation ;

(b) that a full-time training officer shall in any particular case be appointed instead of a part-time training officer ;

(c) that any particular part-time training officer shall devote not less than such time as may be specified in the requirement to the performance of his duties as such.

(6) A training officer appointed in pursuance of this regulation shall not be treated as other than a full-time training officer by reason only that, in addition to his duties as such, he performs other duties relating

to the safety of persons employed in or about coal mines, or that, at any time while the number of workmen falling within sub-paragraphs (b) and (e) of paragraph (1) of the next following regulation employed below ground, whether at the coal face or not, in the mine, mines or undertaking for which he is appointed does not exceed 50, he performs other duties in relation to the mine, mines or undertaking.

(7) Where in pursuance of this regulation a person appoints a part-time training officer, he shall notify to the officer in writing on what days or parts of days in each week the officer is to perform all or any of his duties as such ; a copy of every such notification, while it remains in force, shall be kept at every mine at which the officer to whom it relates is to perform his duties as such and shall be produced on demand to an inspector of mines.

15.—(1) The duties of a training officer shall include—

(a) superintending the training and supervision carried out in pursuance of these regulations on the premises of the undertaking or at the mine or mines for which he has been appointed ;

(b) keeping records of the training given on the premises of the undertaking or at the mine or mines for which he has been appointed to every person in pursuance of Regulations 3 and 4 of these regulations and making weekly reports to the manager of the mine at which such person is employed on the progress of every such person during such time as in pursuance of those regulations he is so training ;

(c) keeping records of the supervision given on the premises of the undertaking or at the mine or mines for which he has been appointed to every person in pursuance of Regulation 5 of these regulations and making weekly reports to the manager of the mine at which such person is employed on the progress of every such person during such time as in pursuance of that regulation he is being so supervised ;

(d) making recommendations to the manager of the mine as to the training of any person employed in or about the mine for employment on work of which he has had no experience ;

(e) making to the manager of the mine quarterly reports in writing on the progress of every person employed in the mine on work below ground, whether at the coal face or not, who has not had 18 months' experience of work below ground in coal mines until he has had such experience for 18 months ;

(f) supervising the personal welfare, while they are at work, of persons employed in or about the mine who have had less than six months' employment in or about a mine.

(2) The records referred to in the preceding paragraph of this regulation shall if the Minister so directs, be in a prescribed form and shall be kept at the mine at which the person, or persons, to whom

they relate is, or are, employed or, in a case in which the mine is not a large coal mine (as defined in Regulation 14 of these regulations) and is not the only mine comprising the undertaking, at such place as may from time to time be approved by the inspector of mines for the division in which the mine is situate ; and every such record shall be kept at such mine or place, as the case may be, for a period of at least 12 months from the day on which it was made or, if there is more than one entry in a record from the day on which the last entry was made ; in the case of any person to whom a record relates ceasing to be employed at a mine or at any other mine in the same ownership, the mine owner of any other mine at which such person is next thereafter employed shall forthwith give notice of such employment to the mine owner of the mine at which he was lastly employed who shall forthwith send to such mine owner such record or a copy thereof, in so far as it relates to the person so employed.

(3) Every record and report referred to in paragraph (1) of this regulation and every copy thereof, shall be produced at any time on demand to an inspector of mines.

16.—(1) The Minister may, to such extent for such periods, on such terms and subject to such conditions (if any) as he may specify, grant an exemption in any case or class or description of cases, from compliance with all or any of the foregoing provisions of these regulations ; and may direct in any such exemption that other provisions as specified therein shall apply in respect of such case, or class or description of cases.

(2) An exemption granted under the preceding paragraph of this regulation may provide that it shall only have effect so long as any provisions specified therein are complied with.

(3) Any exemption granted under the provisions of this regulation may be revoked, or from time to time varied, by the Minister.

17.—(1) In these regulations and (unless the contrary intention appears) in any instrument issued under the provisions of these regulations, unless the context otherwise requires, the following expressions have the meanings hereby respectively assigned to them, that is to say :

“ Instructor ” means a person appointed in writing by the manager who is competent to give instruction and supervision in the performance of the work in which instruction and supervision is being given, who is required to devote his whole time to giving instruction and supervision and who does not himself assist in the performance of the work in which he is giving instruction and supervision otherwise than for the purpose of demonstration.

“ Supervising workman ” means a workman skilled in the performance of the work in which instruction and supervision is being given.

“ Work at the coal face ” includes any work performed within ten yards of a face (other than work performed by any person employed on the haulage or on a conveyor-loader in handling or filling tubs, or as a conveyor-engine attendant, in any part of the area comprised within the face and the sides of a road as if the sides were extended to the face) but does not include work performed at a training face.

“ Training face ” means a coal production face set aside for training purposes where—

(a) not more than one person under training is supervised by any one instructor or supervising workman at any one time, unless, in relation to an instructor, an inspector of mines or the Chief Inspector otherwise at any time in writing permits ;

(b) no person under training is permitted to go on to the coal face, except within the area comprised within the face and the sides of a road as if the sides were extended to the face, unless accompanied by the instructor or supervising workman under whose instruction or supervision he is being trained ;

(c) no work is performed at any time when training is in progress except by a person under training, an instructor, a supervising workman, an official of the mine and any other person duly authorised for that purpose by the manager of the mine or by any official of the mine nominated for that purpose by the manager ;

(d) no wages of any person employed at the face when training is in progress depend directly on the amount of mineral gotten or the quantity of work done.*

(2) In reckoning for the purposes of these regulations and any exemption granted under the provisions of these regulations a person's experience of, or employment in, any work in or about a coal mine, his total experience of, or employment in, such work in or about all coal mines in which he has been employed shall be aggregated.

(3) References in these regulations to any instrument issued under the provisions of these regulations shall be construed as including references to any direction, approval and notification given certificate issued, appointment, requirement and report made, record kept and permit and exemption granted under any of the provisions of these regulations, as the case may be.

* For the time being a supervising workman at a longwall part-production training face may participate in a wages “ pool ”, if such a pool is customary at that face. The length of face set aside for the training “ pair ” or “ pairs ” must not exceed limits specified by the manager, and any adjustments because of absences at the face must not result in the combined task of any “ pair ” being increased. Trainees' wages are not affected. This exemption is due to expire on 31 December, 1953, but is under review.

VENTILATION.

Coal Mines (Ventilation) General Regulations, 1947, No. 974.

1.—Determinations shall be made of the percentage of inflammable gas present in the general body of the air (in these regulations referred to as the “ firedamp content ”) in every ventilating district of a mine in which safety lamps are required to be used by the Act and in which electrical power is used at or within 50 yards of the face.

Such determinations shall be made in accordance with the provisions of the three next following regulations.

2.—(1) Determinations shall be made—

(a) by means of apparatus of a type approved for the purpose by the Minister ; or

(b) by analysis of samples of air.

(2) Determinations made by any such apparatus as aforesaid shall be made by a competent person appointed in writing for the purpose by the manager ; in the case of determinations made by the analysis of samples of air, the samples shall be taken by a competent person as aforesaid, and shall be analysed within four days of the taking thereof.

(3) In reckoning the period of four days as aforesaid, no account shall be taken of any Saturday, Sunday or day of general holiday.

3.—Determinations shall be made or, as the case may be, samples of air taken—

(a) in respect of each air current in every longwall face working from which coal or other mineral is being won—

(i) at, or as near as practicable to, a point in the airway ten yards on the return side of the last working place ; and

(ii) at, or as near as practicable to, a point in the airway ten yards on the intake side of the first working place ;

(b) in respect of each air current in every section of workings from which coal or other mineral is being won otherwise than by the longwall method, at suitable points, fixed by the manager, in the airways of each section of the workings ; so however that if the inspector of the division is of opinion that the location of any of such points is unsuitable, the manager shall fix some other point or points in substitution therefor.

Determinations shall be made or samples taken, if the inspector of the division so requires, in respect of every such air current as aforesaid, at any one point, fixed by that inspector, in the air current.

4.—(1) Determinations shall be made or, as the case may be, samples of air taken once in every week ; so however that if any determination shows a firedamp content exceeding 0.8 per cent. determinations shall be made or samples of air taken, unless the inspector of the division

otherwise permits, at intervals not exceeding 24 hours for so long as such content exceeds that percentage and for the seven next following working days, and that if no determination made during the month immediately preceding any day has shown a firedamp content exceeding 0.6 per cent., it shall be sufficient to make such determinations or take such samples once in every month for so long as such content does not exceed that percentage :

Provided that in any case in which any alteration is made in the arrangements for ventilating a mine, or any part thereof, which affects a ventilating district in which in pursuance of Regulation 1 of these regulations determinations have to be made of the firedamp content, a determination of the firedamp content of the air current at any point so affected shall be made as soon as practicable after the making of such alteration.

(2) Such determinations shall be made or, as the case may be, samples taken during the latter part of the cutting shift, if the face is machine-cut or during the latter part of the filling shift if the face is not machine-cut :

Provided that if it is established that the firedamp content is normally greatest at any other stage of the cycle of operations, such determinations may be made and samples taken at such stage with the consent of the inspector of the division and shall be made or taken at such stage if required by such inspector.

(3) If the inspector refuses or revokes his consent, or if the manager objects to any requirement of the inspector, under the last preceding paragraph, the matter shall be settled in manner provided by the Act for settling disputes.

(4) Determinations made or samples taken once in every week or month as aforesaid shall, as far as practicable, be made or taken during the last cutting or, as the case may be, filling shift of the working week.

(5) For the purposes of this regulation the expression " working week " means the period of seven days beginning on a Saturday.

5.—(1) Particulars of every determination made in pursuance of and in accordance with the provisions of the foregoing regulations shall be recorded as soon as practicable in a book to be kept at the mine for the purpose.

(2) Every determination showing a firedamp content in excess of 1.0 per cent. shall, unless such excess was caused by a temporary derangement in the ventilation which has been remedied, or unless the inspector of the division otherwise permits, be reported in writing forthwith to the inspector of the division.

6.—The points at which the quantity of air shall be measured in pursuance of subsection (2) of Section 29 of the Act (in these regulations referred to as the " measuring points ") shall be—

(a) in the main intake airways of every seam, at a point as near as practicable to the downcast shaft ;

(b) in every split, at, or as near as practicable to, the point at which the split commences ;

(c) in every ventilating district in which in pursuance of Regulation 1 of these regulations determinations have to be made of the firedamp content, at the same points in the airways (except in the air current in a longwall face working) as those at which determinations have to be made or, as the case may be, samples of air taken ; and such measurements shall be made on one of the occasions when such determinations or samples are being made or taken ;

(d) in every ventilating district in which determinations have not to be made of the firedamp content, at, or as near as practicable to, a point 100 yards back from the first working place at the face which the air enters.

7.—In any case in which any alteration is made in the arrangements for ventilating a mine, or any part thereof, which substantially affects, or is likely so to affect, the quantity of air passing any measuring point, such quantity shall be measured as soon as practicable after the making of such alteration.

8.—Particulars of every measurement made in pursuance of the two last preceding regulations, and such other information in relation to the quantity of air as may be prescribed, shall be recorded forthwith in a book to be kept at the mine for the purpose.

9.—(1) Every fan shaft brought into use at a mine on or after 1 August, 1947, and, if so required by the inspector of the division, any fan shaft in use at a mine before that date shall, if ordinarily used for winding, be provided with a properly constructed air-lock :

Provided that, in the case of a fan shaft in use at a mine before the aforesaid date, if the manager objects to any such requirement, the matter shall be settled in manner provided by the Act for settling disputes.

(2) The provisions of this regulation shall not apply to a small mine or to any mine exempted by the Minister on the ground that he is satisfied that such provisions are inappropriate to that mine or that it is not reasonably practicable to comply with them in that mine.

10.—(1) Every road which is a connection between—

(a) a main intake airway and a main return airway ; or

(b) an intake airway and a return airway in either of which airways the quantity of air is required by these regulations to be measured ;

shall, until it has ceased to be required for the working of the mine and has been sealed off, be provided with at least two effective doors ; so

however that if, owing to any special circumstances, it is impracticable to provide two such doors, other means of effective separation shall be provided by the manager.

(2) All other roads in which doors or sheets are used to prevent short-circuiting of the air current shall be provided with at least two doors or if it is not practicable in any case to provide two doors, with at least one door and one sheet or with two sheets. Doors and sheets shall be so spaced that whenever one door or sheet is opened, at least one other door or sheet serving the same purpose can be kept shut ; so however that if it is impracticable so to space such doors and sheets the best measures possible in the circumstances shall be taken to minimise leakage of air.

11.—(1) Every ventilation door shall be maintained in efficient working order and in good repair.

Every such door shall be self-closing ; and whenever opened it shall be closed as soon as possible and shall not be propped or fixed so as to remain open. If not in use, every such door shall be taken off its hinges and placed in a position in which it will not cause any obstruction to the air current.

(2) Every ventilating sheet shall be maintained in efficient working order and in good repair, and, in mines where naked lights are used, shall be made of fire-resisting material. Whenever any such sheet is moved it shall be replaced as soon as possible.

12.—Any road connecting an intake and a return airway which has ceased to be required for the working of the mine shall be effectively sealed forthwith.

13.—The installation and maintenance of every fan installed below ground shall be supervised and controlled by a competent person appointed in writing for the purpose by the manager ; and no such fan shall be started, stopped, removed, or in any way altered, repaired or interfered with except by or on the authority of the deputy in charge of the district or some other qualified official of the mine who, before starting any fan, shall satisfy himself that it is safe to do so.

14.—(1) Every auxiliary fan—

(a) shall be installed and worked in such a manner that—

- (i) a sufficient quantity of air shall at all times reach it so as to ensure that it does not re-circulate air ;
- (ii) there is no risk of the air which it circulates being contaminated by any substantial quantity of noxious fumes or dust ;

(b) shall, whether driven electrically or otherwise, be efficiently connected with earth so as to prevent the accumulation of an electro-static charge ;

(c) shall have an air-duct for conducting the air to or from the face of the heading, drift or blind end ; and such air-duct shall be maintained in such condition as will minimise leakage of air and will ensure adequate delivery of the air to within 15 feet of the face.

(2) Any forcing auxiliary fan shall be installed on the intake side of and any exhaust auxiliary fan on the return side of the place which it is to ventilate, and there shall be a minimum distance of 15 feet between the fan and that side of the place which is nearer to the fan :

Provided that where two or more auxiliary fans are installed in series, only the first fan must be installed at not less than the minimum distance aforesaid.

(3) The manager shall, in respect of every auxiliary fan, fix the minimum quantity of air to be delivered or exhausted per minute at the end of the air duct ; and shall appoint in writing a competent person who shall report at least once in every week to the manager the quantity of air delivered or exhausted as aforesaid and whether or not there is any re-circulation of air.

(4) Except in stone drifts, advancing headings ventilated by an auxiliary fan shall, so far as practicable, be interconnected ; and the manager shall specify the maximum distance—

(a) to which any heading may be advanced in front of the last through connection before a new connection is driven ; and

(b) to which any face may be advanced beyond the auxiliary fan used for its ventilation.

(5) In respect of any section of narrow or panel workings the ventilation of which involves the use of two or more auxiliary fans drawing air from the same air current, a plan shall be prepared showing the general system of ventilation and the directions and quantities of the air currents ; and a copy thereof, and of any subsequent plan showing any change in that system, shall be delivered as soon as practicable to the inspector of the division, who may at any time require the system to be modified and such precautions as are specified by him to be taken :

Provided that if the manager objects to any such requirement, the matter shall be settled in manner provided by the Act for settling disputes.

(6) No workman shall enter or remain in any place which is dependent for its ventilation on an auxiliary fan unless such fan is operating efficiently, or after the ventilation of such place has been interrupted, whether by stoppage of the fan or otherwise, except for so long as he is permitted to do so by the deputy in charge of the district or some other qualified official either for the purpose of attending to the fan or restoring the ventilation or after the said official has inspected the place and found it safe.

15.—(1) No fan (other than an auxiliary fan) may be installed below ground unless and until, as the result of a survey of the ventila-

tion of every part of the mine liable to be affected made at the time by a qualified person and of a report as to the appropriate type, size and location of the proposed fan prepared by a qualified engineer, the manager is satisfied that it is necessary or expedient for the proper ventilation of that part of the mine that it should be installed.

(2) Notice that a fan (other than an auxiliary fan) has been installed below ground shall be sent forthwith, together with particulars of the survey and a copy of the report, to the inspector of the division.

(3) For the purposes of the preceding paragraphs of this regulation the movement of a fan from one ventilating district to another shall be deemed to constitute an installation.

(4) The inspector of the division may at any time require that the use of any fan (other than an auxiliary fan) installed below ground shall be discontinued and may require other arrangements to be made and such precautions as are specified by him to be taken : and the manager shall comply with the requisition unless he disputes the reasonableness thereof in which case the dispute shall be settled in manner provided by the Act for settling disputes.

16.—The Chief Inspector of Mines may, except in any case in which provision is made by these regulations for exemption being granted by the inspector of the division, exempt any mine or part thereof or any specified class or description of mines from the application of the provisions of these regulations, or any of them, if he is satisfied that compliance therewith is inappropriate or not reasonably practicable in the circumstances of the case.

17.—The provisions of Section 119 of the Act shall apply to any exemption granted and approval given by the Minister, or the Chief Inspector of Mines, and to any consent and direction given and requirement made by the inspector of the division, under these regulations as they apply to any exemption granted by the inspector of a division.

18.—(1) In these regulations, unless the context otherwise requires, the following expressions have the meanings hereby respectively assigned to them, that is to say—

“ auxiliary fan ” means a forcing fan, or an exhaust fan, used below ground wholly or mainly for ventilating a heading, drift or blind end ;

“ face ” means, in relation to a seam, the exposed surface from which coal or other material is won ;

“ face working ” means, in relation to a face at which supports are systematically withdrawn, all that part of the mine between the face and the front line of the packs (if any) or the last row of the supports for the time being maintained whichever is the farther from the face ; and means, in relation to a face at which supports are not systematically withdrawn, all that part of the mine between the face and a line parallel to it and 12 feet distant from it ;

“firedamp content” has the meaning assigned to it by Regulation 1 of these regulations ;

“measuring points” has the meaning assigned to it by Regulation 6 of these regulations ;

“road” means any part of a passage which is maintained in connection with the working of the mine, except that part which is within ten yards of the face.

WINDING AND HAULAGE.

Coal Mines General Regulations (Winding and Haulage), 1937, No. 143.

PART I.

PRECAUTIONS AGAINST OVERWINDING, ETC.

1.—(*Amends Section 40 (2) of the Coal Mines Act, 1911—see page 19.*)

2.—Unless the automatic contrivance is in full and fixed engagement with the winding engine, it shall be fully engaged either automatically or by the winding engineman whenever persons are to be raised or lowered, and a proper automatic indicator to show that this has been done shall be provided in such a position as to be easily seen by the banksman ; and no person shall be allowed to enter either cage until the indicator shows that the automatic contrivance has been fully engaged.

3.—(*Amends Section 40(10) of the Coal Mines Act, 1911—see page 20.*)

4.—Tests of the automatic contrivance and the brakes shall be made, by a competent person appointed in writing by the manager, in the following manner—

(i) once at least in every week by raising the cage or the cages in turn to pass the last control point above the surface landing.

(ii) once at least in every three months by attempting to land the descending cage at excessive speed. For the purpose of this test the setting of the automatic contrivance may be altered so that a predetermined point in the shaft is regarded as the landing.

5.—(1) Once at least in every six months all cage chains and detaching hooks in general use shall be annealed or given other proper heat treatment and shall be thoroughly examined by a competent person ;

Provided that the Chief Inspector of Mines may, by certificate in writing, exempt from the foregoing requirement as to heat treatment chains or hooks made of any steel which does not require heat treatment.

(2) All detaching hooks in general use shall be dismantled, cleaned and refitted once at least in every three months.

(3) All detaching plates and bells in general use shall be tested monthly by calipers or gauges.

PART II.

WINDING ROPES.

6.—(*Amended Section 40(5) of the Coal Mines Act, 1911, but since superseded by No. 1 of the Coal Mines (Winding and Haulage) General Regulations, 1948.*)

7.—A competent person appointed in writing by the manager shall, once at least in every month, make a special examination of every winding rope in use.

The rope shall be thoroughly cleaned at all places particularly liable to deterioration and at other places not more than 100 yards apart throughout its length, and at each of these places after cleaning, examination shall be made of the circumference and surface condition of the rope and for any fractures of the wires.

PART III.

METHOD OF CAPPING OF WINDING AND HAULAGE ROPES.

(SECTION 40(5) AND 46(1).)

8.—No mode or type of capping shall be used which fails to withstand, for a winding rope, a load of at least seven times the maximum static load and, for a haulage rope, a load of at least 60 per cent. of the breaking strain of the rope.

9.—A competent person appointed in writing by the manager shall, whenever a rope is capped or re-capped, superintend the work, and see that it is properly carried out.

10.—Before each re-capping a length, including the capping, of at least six feet shall be cut off the rope, but if the rope is re-capped after an interval of less than six months, the length cut off may be reduced by one foot for each complete month less than six, to a minimum of three feet :

Provided that this requirement shall not apply in respect of any rope purchased prior to 1 March, 1937, which is too short to permit of the full length prescribed being cut off.

Each piece of rope cut off shall be opened up and its internal condition examined by a competent person approved by the manager.

11.—The capel of a round rope shall not be attached to the rope by rivets passing through the rope.

12.—In those forms of capping in which the wires at the end of the rope are bent back on the rope itself to form a cone, wedges formed by the lapping of soft iron wire shall be placed between the rope and that portion which is bent back. The length of the tapered portion of the socket shall be not less than eight times the diameter of the rope.

13.—If white metal is used in the capping of ropes—

(a) its melting point shall not exceed 570° Fahr. and its temperature when poured into the socket shall not exceed 685° Fahr.*;

(b) in the length of rope which is to lie within the tapered part of the socket the fibre core, if any, shall be cut out and the wires shall be untwisted and thoroughly cleaned;

(c) the socket shall be heated to a temperature of about 212° Fahr. before the white metal is poured into it.*

14.—Numbers 9, 10, 11 and 12 of these regulations shall not apply in the case of ropes used only for the hauling of mineral.

PART IV.

GENERAL.

15.—There shall be recorded in a book kept at the mine dated reports and other information relating to the measures taken to comply with—

(a) Numbers 4 and 5 of these regulations, and every such record shall be preserved for a period of 12 months after the report or other information was recorded; and

(b) Numbers 6, 7 and 10 of these regulations, and every such record shall be preserved for a period of 12 months after the rope to which it relates has ceased to be used.

Coal Mines (Winding and Haulage) General Regulations, 1948, No. 302.

1.—(*Amends Section 40(5) of the Coal Mines Act, 1911—see page 20.*)

2.—(*Amends Section 44 (1) of the Coal Mines Act, 1911—see page 21.*)

* The capping metal specified and the method of capping described in British Standard Specification No. 643, 1935, are advised.

PART THREE

STATUTORY CERTIFICATES OF QUALIFICATIONS.

INTRODUCTORY NOTE.

This Part of the volume is intended primarily for the information and guidance of mining teachers and prospective applicants for statutory certificates of qualifications. It includes, therefore, all the matters which come within the province of the Mining Qualifications Board.

An effort has been made to ensure that each item is as informative as possible, but if further details are required about any particular point an inquiry should be sent to The Secretary, The Mining Qualifications Board, Thames House South, Millbank, London, S.W.1.

A. MINING QUALIFICATIONS BOARD.

Coal Mines (Mining Qualifications Board) General Regulations, 1950 No. 77.

1.—(*Amends Section 8(1) of the Coal Mines Act, 1911, to provide for the substitution of the Mining Qualifications Board for the Board for Mining Examinations—see page 6.*)

2.—(*Amends Section 9(1) and (2) of the Coal Mines Act, 1911, to empower the Mining Qualifications Board to make rules prescribing the qualifications to be possessed by applicants for certificates of competency and for any other certificates of qualifications required by the Act or by regulations made under the Act—see page 7.*)

3.—(*Amends Section 10(1) of the Coal Mines Act to provide for the grant of certificates of competency to persons with qualifications exempting them from the Board's examinations, and makes a verbal amendment to Section 10(4)—see page 9.*)

4. and 5.—(*Provisions now lapsed.*)

B. CERTIFICATES OF COMPETENCY.

Coal Mines (Certificates of Competency) General Regulations, 1950, No. 743.

These Regulations amend Sections 2(2), 3(2), 5(1) and (2), and 7 of the Coal Mines Act, 1911—see pages 5 and 6. The Act applies to mines of stratified ironstone, shale and fireclay as well as to mines of coal, and the object of these amendments is to provide that there may be certificates of competency limited to mines of any one of these minerals. At the present time the only limited certificate is for mines of stratified ironstone.

Mining Examinations (Certificates of Competency) Rules, 1952.

(*Note—The rules below introduce a new system of three-stage examinations for certificates of competency. They will run concurrently with the*

existing examinations, which will continue for another seven years at least. These latter remain unchanged except that the maximum number of marks allotted to individual subjects has been varied as described in the notes at the end of the rules.

The new examinations comprise a preliminary, intermediate and final stage. The preliminary and intermediate stages are common to both first and second-class examinations. The Mining Qualifications Board do not intend to examine in the preliminary stage for which any of the certificates listed in the first schedule will be acceptable. Neither is it expected that the Board will need to hold examinations for the intermediate stage since the holder of an ordinary national certificate in mining, or other superior qualification mentioned in Rule 7, will be automatically exempted. A candidate for the final stage, second class, will have to qualify at an examination in the subjects listed in the second part of the fourth schedule, but if he holds a higher national certificate in mining he will only be required to take the paper in mining law. A candidate for the final stage, first class, will have to qualify at an examination in the subjects listed in the third part of the fourth schedule, but the holder of a qualification mentioned in Rule 9 will only be required to take the papers in mining technology and mining law.

It should be noted that there will not be three-stage examinations for limited certificates of competency in stratified ironstone mines.)

PART I

1.—An applicant for any certificate of competency under the Act must comply with—

- (a) the provisions of this Part of these rules; and
- (b) the provisions of Part II or Part III of these rules.

2.—An applicant for a certificate of competency must produce to the Board with his application, the following documents—

- (a) a birth certificate, or other evidence of his age satisfactory to the Board;
- (b) two testimonials, on forms provided for the purpose by the Board, of his good character;
- (c) a certificate, granted within the last preceding five years, by a society or body approved by the Minister for the purposes of Regulation 5 of the Coal Mines General Regulations (First Aid), 1930, that he is proficient in first aid;*
- (d) a certificate concerning his ability to test for gas, and his hearing, being a certificate—
 - (i) granted before 1 June, 1952, under paragraph (b) or (c) of subsection (1) of Section 15 of the Act; or

* For list of approved societies and bodies see page 237.

- (ii) granted under sub-paragraph (b) of Rule 6 of the Mining Examinations (Deputies) Rules, 1952, made by the Board;
- (e) particulars of his practical experience in mining referred to in Rule 3;
- (f) any one of the certificates specified in the first schedule to these rules:

Provided that paragraph (f) shall not apply to an applicant who—

- (i) (being an applicant under Part II of these rules) was born before 22 *June*, 1918;
- (ii) is the holder of an ordinary national certificate in mining;
- (iii) is the holder of any degree or diploma specified in the second schedule to these rules;
- (iv) is an associate member by examination of the Institution of Mining Engineers; or
- (v) was educated outside the United Kingdom and satisfies the Board that his standard of general education is equivalent to the standard required to be attained under that paragraph.

3.—(1) Subject to any reduction determined by the Board, an applicant for a certificate of competency must satisfy the Board that he has had not less than five years' practical experience in mining.

(2) The practical experience aforesaid must—

(a) be experience—

- (i) under the National Coal Board's Scheme of Directed Practical Training in Mining Engineering; or
- (ii) below ground in mining which includes the performance, immediate supervision or responsible control, during periods amounting in all to not less than two years, subject to any reduction determined by the Board, of—
the getting of minerals (by hand or mechanical methods)
or work at the face directly connected with such getting;
setting of supports or repairing; and stonework;

(b) be experienced either wholly in one or more mines to which the Act applies, or partly in one or more such mines and partly in one or more mines outside the United Kingdom of coal, stratified ironstone, shale or fireclay, with respect to which the Board are satisfied that it or they provided equivalent experience;

(c) in relation to an applicant for a certificate of competency valid only with respect to mines of a specified class or description, include not less than three years' experience in one or more mines of that class or description.

(3) Any reduction of practical experience as aforesaid shall be such reduction in respect of any qualification or experience (including

performance of national service) acquired by the applicant as the Board may determine having regard to any directions given to them by the Minister.

4.—An applicant may be required by the Board to present himself for an interview upon any one or more subjects on which, for the purposes of any written examination held by the Board under Part II or Part III of these rules, he has submitted answers.

PART II

5.—An applicant for a second-class certificate of competency under this Part of these rules must qualify after attaining the age of 21 years* at a written examination held by the Board on the subjects specified in the first part of the third schedule to these rules; so however that, in the application of this rule to any applicant for a certificate valid only with respect to mines of stratified ironstone, there shall be substituted for those subjects the subjects specified in the second part of that schedule.

6.—An applicant for a first-class certificate of competency under this Part of these rules must qualify after attaining the age of 21 years* at a written examination held by the Board on the subjects specified in the third part of the third schedule aforesaid; so however that, in the application of this rule to any applicant for a certificate valid only with respect to mines of stratified ironstone, there shall be substituted for those subjects the subjects specified in the fourth part of that schedule.

PART III

7.—An applicant for any certificate of competency under this Part of these rules must qualify at an intermediate written examination held by the Board on the subjects specified in the first part of the fourth schedule to these rules unless he is—

- (a) the holder of an ordinary national certificate in mining;
- (b) the holder of any degree or diploma specified in the second schedule to these rules; or
- (c) an associate member of the Institution of Mining Engineers, having passed such examinations of the Institution as the Board require.

8.—An applicant for a second-class certificate of competency under this Part of these rules must qualify after attaining the age of 21 years at a final written examination held by the Board on the subjects specified in the second part of the fourth schedule aforesaid:

Provided that if any such applicant is—

- (a) the holder of a higher national certificate in mining;

* Section 10 (1) of the Coal Mines Act, 1911, provides, however, that an applicant shall not be registered as the holder of a first-class or second-class certificate until he attains the age of 23 years.

(b) the holder of any degree or diploma specified in the second schedule to these rules; or

(c) an associate member of the Institution of Mining Engineers, having passed such examinations of the Institution as the Board require;

he shall only be required to qualify in the subject of mining law.

9.—An applicant for a first-class certificate of competency under this Part of these rules must—

(a) be the holder of a second-class certificate of competency obtained by virtue of his qualification under the last foregoing rule; and

(b) qualify at a final written examination held by the Board on the subjects specified in the third part of the said fourth schedule: Provided that if any such applicant—

(i) is the holder of any degree or diploma specified in the second schedule to these rules;

(ii) is an associate member of the Institution of Mining Engineers, having passed such examinations of the Institution as the Board require; or

(iii) has completed after obtaining a higher national certificate in mining a full time course of instruction of not less than one year approved by the Board and has passed an examination approved by them in relation thereto;

paragraph (a) shall not apply and he shall only be required to qualify in the subjects of mining technology and mining law.

PART IV

10.—The times and places at which examinations are to be held under these rules shall be published by the Board in the *Ministry of Labour Gazette* and in such other publications as the Board may from time to time think fit.

FIRST SCHEDULE

Rule 2(f)

Certificates of Education

1. (a)—(i) A certificate that the applicant has passed the School Certificate examination of one of the following bodies—

The Oxford and Cambridge Schools Examination Board.

The Oxford Delegacy of Local Examinations.

The Cambridge Local Examinations Syndicate.

Durham University.

London University.

The Northern Universities Joint Matriculation Board.

Bristol University.

The Central Welsh Board.

The Welsh Joint Education Committee.

- (ii) A statement of success granted to the applicant by any of the bodies aforesaid certifying that he had obtained a credit in a School Certificate examination held by them or a pass in a Higher School Certificate examination held by them in english, mathematics and one other subject.
- (b) (i) A certificate that the applicant has passed one of the following examinations of the Scottish Education Department—

Day School Certificate (Higher) examination.
 Leaving Certificate examination.
 Senior Leaving Certificate examination.

- (ii) A statement by the Scottish Education Department certifying that the applicant has satisfactorily completed a course of not less than three years at a junior or senior secondary school.
- (iii) A statement by the Scottish Education Department that the applicant had at a Leaving or Senior Leaving Certificate examination attained a standard in english, mathematics and one other subject equivalent to that required to be attained at an examination referred to in sub-paragraph (b) of paragraph 3.

2. A certificate or statement certifying that the applicant has passed the matriculation examination of any university in Great Britain or the preliminary examination of the Scottish Universities Entrance Board.

3. (a) A certificate (or certificates) that the applicant has passed an examination for the General Certificate of Education at the ordinary level in english, mathematics and one other subject.

(b) A certificate (or certificates) that the applicant has passed an examination for the Scottish Leaving Certificate at the lower level in english, mathematics and one other subject.

4. (a) A statement of success granted by any of the bodies aforesaid in respect of any one or two of the subjects mentioned in sub-paragraph (a) (ii) of paragraph 1 and a certificate (or certificates) granted in respect of any one or two of the same subjects mentioned in sub-paragraph (a) of paragraph 3 which together show that the applicant has attained a standard in all those subjects equivalent to that required to be attained under either of those sub-paragraphs.

(b) A statement by the Scottish Education Department in respect of any one or two of the subjects mentioned in sub-paragraph (b) (iii) of paragraph 1 and a certificate (or certificates) granted in respect of any one or two of the same subjects mentioned in sub-paragraph (b) of paragraph 3 which together show that the applicant has attained a standard in all those subjects equivalent to that required to be attained under either of those sub-paragraphs.

5. A certificate that the applicant has passed an examination in the subjects of english, mathematics, drawing and science, being a certificate granted by any of the following bodies—

- Northern Counties Technical Examinations Council.
- Yorkshire Preliminary Mining Examinations Board.
- Union of Lancashire and Cheshire Institutes.
- East Midland Educational Union.
- Union of Educational Institutions.
- Kent County Examinations Board.
- Welsh Joint Education Committee.
- East of Scotland Joint Committee for Mining. Preliminary Examinations.
- West of Scotland Joint Committee on the Organisation of Classes in Science and Technology.

SECOND SCHEDULE

Rules, 2, 7, 8 & 9

Degrees and Diplomas

| <i>Name of Institution</i> | <i>Description of Degree, Diploma, etc.</i> |
|---|--|
| Benares Hindu University | Degree of B.Sc. in Mining Engineering. |
| Birmingham University | Degree of B.Sc. in Mining. |
| Durham University | Degree of B.Sc. in Applied Science (Mining). |
| | Honours Degree of B.Sc. in Mining Engineering. |
| | Diploma in Mining. |
| Edinburgh University | Degree of B.Sc. in Mining. |
| Glasgow University | Degree of B.Sc. in Mining Engineering. |
| | Certificate of Proficiency in Mining. |
| Heriot-Watt College, Edinburgh | Associateship in Mining. |
| Indian School of Mines, Dhanbad | Associateship in Mining Engineering. |
| Leeds University | Degree of B.Sc. in Mining. |
| | Degree of M.Sc. (Mining) for students who have already graduated in Engineering. |
| | Diploma in Mining. |
| London University | Degree of B.Sc. (Eng.) in Mining. |
| Manchester University | Degree of B.Sc. (Tech.) |
| | Certificate in Technology (Mining). |
| Nottingham University | Degree of B.Sc. in Mining. |
| | Certificate in Mining. |
| Oxford University and Birmingham University (jointly) | Diploma in Coal Mining. |

| | |
|--|--|
| Royal School of Mines, London | Associateship in Mining. |
| Royal Technical College, Glasgow | Associateship in Mining Engineering. Diploma in Mining Engineering. |
| Sheffield University | Diploma in Mining. Degree of Bachelor of Engineering (Mining). |
| University of Wales | Degree of B.Sc. in Mining Engineering. |
| University College of South Wales and Monmouthshire | Diploma in Metalliferous Mining. |
| Wigan and District Mining and Technical College | Diploma in Mining. |

THIRD SCHEDULE

Rules 5 & 6

Part I

Second-Class Certificates

Methods of Working.
Ventilation.
Explosions, Underground Fires and Inundations.
Machinery.
Surveying and Levelling.
Mining Legislation.

Part II

Second-Class Certificates (*Mines of stratified ironstone*)

Methods of Working.
Ventilation, Ignitions, Underground Fires and Inundations.
Machinery.
Surveying and Levelling.
Mining Legislation relating to stratified ironstone mines.

Part III

First-Class Certificates

Winning and Working.
Theory and Practice of Ventilation.
Explosions, Underground Fires and Inundations.
Machinery.
Surveying, Levelling and Drawing.
Mining Legislation.

Part IV

First-Class Certificates (*Mines of stratified ironstone*)

Winning and Working.
Theory and Practice of Ventilation.
Ignitions, Underground Fires and Inundations.
Machinery.
Surveying, Levelling and Drawing.
Mining Legislation relating to stratified ironstone mines.

FOURTH SCHEDULE

Rules 7, 8 & 9

Part I

Intermediate Examination

Mathematics.
Physics and Chemistry.
Mining Technology.
Mechanical Engineering.
Electrical Engineering.
Drawing.

Part II

Final Examination (Second-Class Certificate)

Mining Technology (two papers).
Colliery Engineering.
Surveying.
Mining Law.

Part III

Final Examination (First-Class Certificate)

Mining Technology.
Geology.
Mechanical Engineering.
Electrical Engineering.
Surveying.
Mining Law.

SUPPLEMENTARY NOTES ON THE CERTIFICATES OF COMPETENCY RULES

1. The maximum marks will be 100 for each subject in the first-class written examinations referred to in Rule 6 and Rule 9, and in the second-class written examinations referred to in Rule 8.

The maximum marks for each subject in the second-class written examinations referred to in Rule 5 will be:—

| | |
|---|-----|
| Methods of working | 200 |
| Ventilation | 200 |
| Explosions, underground fires and inundations | 150 |
| Machinery | 150 |
| Surveying and levelling | 100 |
| Mining legislation | 100 |

The maximum number of marks for each subject in the second-class examination for mines of stratified ironstone are given in brackets in Part II of the syllabus below.

An applicant will be deemed to have qualified at a written examination if he obtains 40 per cent. or more for each subject and 57.5 per cent. or more for the total number of subjects taken by him. An applicant who fails to obtain 40 per cent. for one subject, or two subjects, but who nevertheless obtains 60 per cent. or more for the total number of subjects taken by him, will be eligible to be re-examined at the next succeeding written examination in the respective subject or subjects in which he so failed, and if he then qualifies in such subject or subjects he will be deemed to have qualified at a written examination. As part of the examination, the Examining Board may require any applicant to present himself for an interview related to any one or more subjects on which he has submitted written answers.

2. The concessions previously allowed to national service candidates are not continued in the new rules. Those who have already been accepted as national service candidates will, however, be allowed to complete the examination under the previous rules.

3. The syllabus for the subjects mentioned in the third schedule to the rules are as follows—

Part I

SECOND-CLASS CERTIFICATE EXAMINATION

Methods of Working. Systems of laying out and working under varying conditions, of coal and other stratified deposits; the application of machinery to mining; methods of supporting roof and sides; shot firing.

Ventilation. The properties, identification and practical estimation of gases met with in mines; natural ventilation fans and other ventilators; the distribution and control of the air underground; stoppings and air crossings; measurement of air currents; construction, use and testing of safety lamps.

Explosions, Underground Fires and Inundations. Causes and preventions; gas; coal dust; spontaneous heating; rescue operations, apparatus and organisation; precautions in approaching disused workings and mining under water-logged strata; recovery of mines after explosions, fires and inundations.

Machinery. Machinery and plant in common use at a colliery, including the use of electricity, and with special reference to safety.

Surveying and Levelling. Elementary surveying and levelling; arithmetic (calculation of areas and the volumes of simple solids).

Mining Legislation. Legislation relating to safety and health; general regulations and orders; writing of reports.

Part II

SECOND-CLASS CERTIFICATE EXAMINATION

(Mines of stratified ironstone)

Methods of Working. Systems of laying out and working stratified ironstone deposits under varying conditions; application of machinery to mining; methods of supporting roof and sides; shot firing. (300)

Ventilation, Explosions, Fires and Inundations. Properties, identification and estimation of gases met with in mines of stratified ironstone; natural ventilation, fans and other ventilators; distribution and control of air underground (including stoppings and air crossings); measurement of air currents; construction, use and testing of safety lamps; explosions and fires (causes and prevention); rescue operations, apparatus and organisation; precautions against water, gas and other dangers in approaching disused workings and in mining under water-logged strata or old workings; recovery of mines after explosions, fires and inundations. (300.)

Machinery. Machinery and plant in common use at a mine of stratified ironstone (including use of electricity, and with special reference to safety). (200.)

Surveying and Levelling. Elementary surveying and levelling; arithmetic (calculation of areas and volumes of simple solids). (100.)

Mining Legislation; First Aid; Reports. Legislation (including general regulations and orders) relating to safety and health in mines of stratified ironstone; first aid and ambulance work; writing of reports. (100.)

Part III

FIRST-CLASS CERTIFICATE EXAMINATION

Winning and Working. The geology of coal and other stratified deposits; boring and sinking; systems of laying out and working under varying conditions; the application of machinery to mining; methods of supporting roof and sides; blasting and general knowledge of explosives and other means of getting minerals.

Theory and Practice of Ventilation. The properties, identification and practical estimation of gases met with in mines; sources, effects and control of heat in mines; natural ventilation fans and other ventilators; the distribution and control of the air underground; stoppings and air crossings; construction, use and testing of safety lamps.

Explosions, Underground Fires and Inundations, their Causes and Preventions. Gas; coal dust; spontaneous heating; rescue operations, apparatus, and organisation; recovery of mines after explosions, fires and inundations; precautions in approaching disused workings and mining under water-logged strata against water, old workings, or gas.

Machinery. For winding, hauling, pumping, mechanical coal-cutting and conveying etc.; generation and transmission of power (mechanical, steam, compressed air, hydraulic, electrical); strength of materials.

Surveying, Levelling and Drawing. Magnetic declination; loose and fast needle dialling; calculation of areas and volumes; contour lines and levelling; traversing with the theodolite underground and on the surface; connecting of surface and underground surveys; triangulations; mine plans and sections; the use, care and testing of instruments.

(Each applicant must, before the date of the written examination, send to the Secretary a plan of a mine survey and a section prepared from an underground levelling made and drawn by himself, with the original plottings and the notes from which the plottings have been made. It is recommended that plans should be drawn on the scale of 1: 2500 and all levels should be related to a datum 10,000 feet below Ordnance Datum. The dimensions of the plan should not normally exceed 2 feet by 1 foot 6 inches.)

Mining Legislation. Legislation relating to safety and health; general regulations and orders; writing of reports.

Part IV

FIRST-CLASS CERTIFICATE EXAMINATION

(Mines of stratified ironstone)

Winning and Working. Geology of stratified ironstone deposits; boring and sinking; systems of laying out and working under varying conditions; applications of machinery to mining; methods of supporting roof and sides; blasting; general knowledge of explosives and other means of getting minerals.

Theory and Practice of Ventilation. Properties, identification and practical estimation of gases met with in mines of stratified ironstone; natural ventilation, fans and other ventilators; distribution and control of air underground (including stoppings and air crossings); construction, use and testing of safety lamps.

Explosions, Underground Fires and Inundations (causes and prevention). Gas; rescue operations, apparatus and organisation; recovery of mines after explosions, fires and inundations; precautions against water, gas and other dangers in approaching disused workings and in mining under water-logged strata or old workings.

Machinery. Machinery for winding, hauling, pumping, breaking ground and conveying, etc.; generation and transmission of power (mechanical, steam, compressed air, hydraulic, electrical); strength of materials.

Surveying, Levelling and Drawing. Magnetic declination; loose and fast needle dialling; calculation of areas and volumes; contour lines

and levelling; traversing with theodolite under ground and on surface; connecting of surface and underground surveys; triangulation; mine plans and sections; use, care and testing of instruments.

(Each applicant must produce a plan of a mine survey and a section prepared from an underground levelling, made and drawn by himself, with the original plottings and the notes from which the plottings have been made, and the work must be certified by him and by the manager as having been carried out by himself. The plan and section must have been made and drawn within such period before the date of the examination as the Examining Board may determine.)

General Management and Mining Legislation. Lay-out and organisation of surface arrangements under varying conditions; first aid and ambulance work; legislation (including general regulations and orders) relating to safety and health in mines of stratified ironstone; writing of reports.

4. The syllabus for the subjects mentioned in the fourth schedule to the rules are as follows—

Part I

INTERMEDIATE EXAMINATION

Mathematics

Algebra. Simple, simultaneous and quadratic equations with practical applications; arithmetical and geometrical progressions; indices, logarithms and slide rule.

Graphical work. Plotting of algebraic functions; maximum and minimum values; determination of simple laws; rate of increase; simple differentiation.

Mensuration. The mensuration of plane figures and of the regular solids; irregular figures; Simpson's and other rules for areas and volumes.

Trigonometry. Trigonometric ratios, solution of triangles; sine and cosine rules and half angle formulae; plotting trigonometric functions; functions of compound angles; application to problems.

Physics and Chemistry

Physics. Properties of matter; density; hydrostatics; fluid pressure; manometers and hydrometers; atmospheric pressure; the barometer, siphon and pump; Boyle's Law and its application in mining; diffusion of gases; Graham's Law.

Heat. Thermometry; expansion of solids, liquids and gases; Charles' Law and its application; heat transfer; heat units; specific heat; change of state; latent heat of fusion and evaporation; humidity and hygrometry; applications.

Light. Propagation in straight lines; shadows; reflection; refraction in plates, prisms and lenses; application to the telescope; nature of light; the spectrum; measurement of light; foot-candle, candle-power, lumen; photometry.

Magnetism. The magnetisation of iron; the earth's magnetic field; declination and dip; magnetic polarity; the compass needle; surveying instruments using compass needles; magnetic fields of bar and other magnets and combinations of them; magnetic shielding.

Chemistry. Chemical and physical change; elements, compounds and mixtures; chemical reaction; atomic and molecular weights; simple treatment of the laws of chemical combination; equations; the atmosphere, its composition; the mine atmosphere; oxidation combustion and respiration; carbon compounds; chemical, physical and physiological properties of carbon dioxide, carbon monoxide and methane; properties of flame; gas caps; sulphur compounds; hydrogen sulphide; the common acids; standard solutions, titrations; simple acidimetry and alkalinity; hardness of water; water softening; principles of mine air analysis; testing of mine dusts.

Mining Technology

Geology.—The formation and occurrence of coal; lateral variations of seams; faults and folds.

Winning and working.—An account of the methods of entry to coal seams and general methods of working, excluding special methods; temporary and permanent support of the working face and roadways; packing; use of steel and timber; withdrawal of supports; safety precautions to be adopted; roof control and subsidence; breaking ground; use of explosives and their alternatives; shot firing equipment and procedure.

Ventilation and lighting.—Production of air current; natural and artificial ventilation; introduction to the laws of ventilation; distribution of air in mines; measuring and recording of mine ventilation; general precautions against dust, fires and explosions; flame and electric hand lamps; gas detectors.

Haulage, winding and pumping.—Systems of transport on mine roadways and at the face, a brief account of winding appliances, types of pumping plant.

Mechanical Engineering

Mechanics.—Force and its measurement; vectorial representation; triangle, parallelogram and polygon of forces; resolution of forces, the inclined plane; moments and their applications; friction coefficient; centres of gravity; stress, strain, Hooke's Law, Young's Modulus; work and power; lifting and other machines; friction; velocity ratio, mechanical advantage and mechanical efficiency; transmission of power by belts, gears and ropes.

Dynamics.—Velocity and acceleration; laws of linear motion; relation between force, mass and acceleration; momentum, impulse; kinetic energy; hoisting and traction problems in mining.

Materials.—Behaviour in tension, compression and shear; simple treatment of torsion and bending; testing of materials, factor of safety; heat treatment; ferrous and non-ferrous metals used in mines; common engineering materials; their properties and the form in which they are available.

Hydraulics.—Pressure on surfaces; fluids in motion; total energy; Bernoulli's Theorem; flow through pipes, orifices and over weirs.

Steam and other engines.—Principles of combustion; calorific value of fuels; properties of steam; total heat of steam; steam tables and their use; outline of steam engine plant; the steam engine; the mean effective pressure and indicated horse-power; steam consumption; the principle and operation of internal combustion engines; simple treatment of the principles involved in the production and utilisation of compressed air; relationship between mechanical, electrical and heat units of energy; engine tests.

Electrical Engineering

Effects of an electric current; simple ammeters; the electric circuit; e.m.f., resistance and potential difference; the Volt and Ohm; simple voltmeters and standard resistance; Ohm's Law; series and parallel circuits; electric power; the Watt; the Joule; heating by electric current; Joule's equivalent; examples of electric heating; electric wires and cables; insulation and protection; measurement of resistance by voltmeter and ammeter, by comparative fall of potential and by Wheatstone Bridge; the potentiometer; primary and secondary cells; commercial types of primary cells; lead-acid and nickel-alkali accumulators; capacity of secondary cells; charging and maintenance; electrolytic effect of current; electrolytic corrosion; electro-deposition.

Magnetic effect of current; magnetic field of straight wire, ring and solenoid; effect of iron in the magnetic field of a coil; qualitative idea of magnetic circuit with examples; magnetisation curves for iron and steel; electro magnetic induction of e.m.f.; Faraday's experiments and laws; application in the generator and the magneto exploder; development of the simple d.c. generator; function of commutator; the force on a current carrying conductor in a magnetic field; application in the d.c. motor; power conversion in d.c. motor and generator; relationship between watts and h.p.; losses and their conversion to heat; efficiency of machines; idea of a rating limited by temperature rise; the excitation of d.c. machines; shunt, series and compound windings; qualitative treatment of the generator and motor characteristics; general introduction to the principles of alternating current.

Types of ammeters, voltmeters and their uses; shunts and multiplier resistances; bells and bell circuit; sparking at contacts of bell and other circuits; signalling and lighting circuits in mines.

Drawing

Care and use of drawing instruments and scales; geometrical constructions and their application; orthographic projection; projection conventions; first and third angle projections; projection of simple solids; sections; sketches and working drawings of simple mining appliances; isometric and oblique views.

Part II

FINAL EXAMINATION SECOND-CLASS CERTIFICATE

Mining Technology Paper I

Geology

Classification, composition and texture of rocks; formation and occurrence of sedimentary, metamorphic and igneous rocks; denudation, weathering transport and deposition; structural features due to denudation and earth movement; faulting, folding, unconformities, intrusions; relative age of rocks; principles of stratigraphy; characteristic fossils and their uses; an outline of the geological systems with a detailed study of the carboniferous system in Britain and the formation and occurrence of coal.

Boring and Sinking.

Percussive and rotary methods of boring from the surface; the number and position of shafts; surface arrangements; sinkings by ordinary methods; temporary and permanent linings; breaking ground; drainage ventilation and lighting of sinkings; sinking staple pits.

Methods of Working

Opening out from shafts; pit bottom arrangements; shaft pillars; more detailed consideration of methods of working under different conditions and including intensive mechanised methods; cross measure drifts; principles of roof control and their application; solid and strip packing; various methods of supporting roadways from the face to the pit bottom; repairing and enlarging roadways; dust prevention.

Explosives and Shot Firing

Types of explosives for use in mines; composition, classification and characteristics; factors determining choice of explosives; detonators (types and uses; instantaneous and delay action); fuses; shot firing exploders; shot firing cables; principles of shot firing; drilling and placing of shot holes; charging and stemming; simple and multi-shot systems; mis-fires; smoke and gaseous products; accidents and their prevention; storage, handling and recording; substitutes for explosives.

Mining Technology Paper II

Ventilation and Lighting

Ventilation standards as prescribed by legislation; regulations relating to gas detection and air analysis; gas detectors; sources of heat

in mines; physiological effect of gases, dust, heat and humidity; factors affecting quantity of air required for ventilation; production of ventilating pressure by natural and mechanical means; types of fan; reversal arrangements; fan drift and up cast shaft; distribution of the air current throughout the mine; splitting; regulators; ventilation of drifts and headings; exercises in showing ventilation systems on plans; resistance to flow of air; experimental determination of laws; methods of expressing resistance; units, equivalent orifice; a brief consideration of ventilation surveys and their purpose; modern developments in mine lighting at the face and on roadways; photometry and the general problems of illumination in mines.

Explosions, Fires and Inundations

Accidental fires on the surface and underground; their causes and prevention; the fire fighting organisation at the mine; spontaneous combustion; cause and detection of heatings; value of systematic air analysis; methods of dealing with fires and heatings; taking samples from behind stoppings; re-opening of sealed-off workings; fire-damp and coal dust explosions; their causes and prevention; detection of carbon monoxide; self-contained portable breathing apparatus; details of the construction and use of compressed oxygen and liquid air types; gas masks, smoke helmets and equalisers; oxygen reviving apparatus; rescue and first-aid rooms and their equipment; general organisation of rescue and recovery work; water dangers in mines; workings under accumulation of fluid matter; proving of cover; precautions necessary in approaching old workings; boring apparatus and its use; draining and sealing; construction of underground dams.

Colliery Engineering

Mechanical Engineering

Heat engines.—General arrangement of steam power plant at collieries; brief description of boilers for colliery use; seatings and fittings; total heat of steam; dryness fraction; steam pipe lines: provision for expansion and drainage; the steam engine and auxiliary appliances; efficiency of steam plant; principles of internal combustion engines; diesel locomotives; testing.

Compressed air.—Gas laws: isothermal and adiabatic expansion and compression, and the appropriate relationships between P. V. and T.; outline of construction and operation of reciprocating and turbo compressors; advantages of multistage compressors; intercoolers; receivers; pipe lines; efficiency and economy in use.

Hydraulics and pumping plant.—Streamline and turbulent flow; Bernoulli's Theorem and its application; general principles of reciprocating and rotary pumps; description of various types; applications; pumping problems; pipes and pipe lines; typical plant layout.

Materials of construction.—Common engineering materials; properties and testing; special steels in mining use; general principles of heat treatment and its application to mining appliances; properties of steel wire used in rope construction; wire ropes; types and construction; examination and testing; strength of ropes and chains.

Winding.—General outline of winding methods; their relative merits and applications; the driving unit; winding drums, brakes, overwinders and other safety devices; ropes and cappings, guides, cages, skips and fittings, detaching hooks; headgear pulleys; shaft equipment; system for loading and unloading cages and skips; regulations relating to winding.

Underground transport.—Haulage methods and machinery; rope haulage, conveyors; locomotive haulage; types and applications; mechanics of haulage; mine cars; transport of men; tracks, curves and gradients; regulations relating to haulage.

Face Machinery.—Types, construction and application of conveyors; coal-cutting and loading machinery; loaders for coal and stone; cutter-loaders and machines for continuous mining; drilling machines and pneumatic picks; types, construction and application; drilling bits, rods and drilling rigs.

Electrical Engineering

Alternating current; frequency; peak, mean and r.m.s. values; the effect of a.c. in a coil; e.m.f. of self induction; inductance, impedance, angle of lag of current; vector addition of alternating voltages and currents; power and power factor; the wattmeter; the single-phase transformer; magnetising current and no-load loss; relationship between voltage ratio and turns ratio; effect of secondary load on the primary current; ampere-turns ratio; power-factor; three-phase supplies; simple treatment of generation of three-phase e.m.f.; star connection; three-phase 4-wire system; connection of single-phase (e.g. lighting) loads; delta connection; power in a.c. circuits; the induction motor; production of rotating field; relation between speed of field, frequency and number of poles; production of torque in a squirrel-cage rotor; simple explanation of how torque depends on field, current and angle of lag of current and how this accounts for the falling off of torque at low speeds.

Transmission.—Types of cables used in mines; insulating materials and armouring; installation and support in shafts and roadways; joint boxes; earthing and bonding; switchgear; protective devices against overload, no volt and leakage; flexible cables for drills, cutters and conveyors; plugs and sockets; elementary principles of remote control; simple circuit diagrams for power, lighting and signalling.

Utilisation.—Direct and alternating current motors; construction, characteristics and applications; starting, speed control and safety devices; applications to haulage, pumping and ventilation; running and maintenance.

Electrical dangers in mining.—Special methods for the protection of power, lighting and signalling circuit; flameproof apparatus; intrinsic safety; earthing and the earthing system.

Surveying

Linear measurements.—Use of tapes and chains; ranging and measuring lines; obstacles; accuracy in linear measurements.

Surveying.—Chain surveys; magnetic compass and miner's dial; declination and variation; loose and fixed needle surveying; booking and plotting surveys; use of co-ordinates; construction and care of plans.

Levelling.—The straight edge and spirit level; the surveyor's level and staff; levelling equipment; booking and checking levels; plotting sections; contours and contouring; regular and irregular areas and volumes; setting out curves by simple methods; setting out and maintaining roads at specified bearings and inclinations.

The theodolite.—Its general construction and use in mine surveying; dip and strike problems, cross measure drifts; intersection of faults and seams; outline description of methods of correlation of underground and surface surveys; graphical exercises on location of outcrops, the relative position of faults and seams and general drift problems.

Mining Law

Statutory requirements (including regulations and orders) relating to safety, health and conditions of employment in mines under the Coal Mines Act. Historical development of these requirements. Writing of reports.

Part III

FINAL EXAMINATION (FIRST-CLASS CERTIFICATE)

Mining Technology

Boring.—Modern methods to prove seams; study of geological evidence and of boring records.

Sinking.—Type, location, size and sinking of vertical and inclined shafts by various methods.

Surface arrangements.—Lay-out and location of power plant, sidings, winders, fans, coal preparation plant, workshops, baths, lamproom, and other essential surface buildings.

Winding.—Decking arrangements at the surface and underground; factors affecting the choice of the winding system; the selection of the method; cages and skips; winding from different levels.

Planning the underground workings.—The selection of the system of mining with due regard to the geological conditions, sequence of extractions of schemes, ventilation and methods of support; the design and lay-out of the pit bottom; the design, distribution and support of main roads.

Transport arrangements.—The selection and organisation of methods for the transport of coal and of supplies; the application of rope, conveyor, and locomotive haulage systems; man-riding haulages.

Methods of working.—The lay-out and organisation of the districts; use of machinery at and near the working face; the application of mechanised methods in the driving of level and inclined drifts.

Strata control and support.—Principles of roof control; shaft pillars; prevention of surface damage; shaft linings, roadway supports, face supports; hand and power stowing.

Mine ventilation.—Types and characteristics of mine fans; the combined effect of the fan and natural ventilation; ventilation surveys, quantity and pressure determinations; booster and auxiliary fans; air analysis and its application to ventilation control; the testing and estimation of airborne dust; methods of reducing the dust hazard; the effects of temperature and humidity in mines.

Coal preparation.—Screening and crushing plant; modern methods of coal cleaning; float and sink tests; washability curves; selection of suitable type of coal preparation plant; problems of de-dusting and de-watering; flow sheets and diagrams.

Safety and health.—Causes of accidents, accident rates; accident prevention; the organisation at the colliery to deal with accidents and dangerous occurrences; rescue equipment and organisation; occupational diseases, their causes and prevention.

Geology

A study of minerals and rocks including the identification of hand specimens and the use of the petrological microscope; economic geology of stratified deposits; principles of stratigraphy; fundamental laws; classification of stratified rocks; fossils and their use in the correlation of sedimentary rocks and coal seams; coal measure fossils; flora and fauna; coal measures, conditions of deposition, rhythmic nature of deposits; characteristics of coal measure rocks; the origin and formation of coal seams; correlation of seams.

Outline of the geological systems and formations; their distribution in Great Britain and economic importance; the carboniferous system; the effect on coalfield geology of earth movements; visible and concealed coalfields of Great Britain; their location and general structure; superficial and alluvial deposits; their occurrence and effect on mining operations; relation of superficial deposits, glacial deposits, "solid" rocks and geological structures to the occurrence of water and to mining operations generally.

Geological mapping.—The representation of geological structures on a plan; plotting of outcrops; study of geological maps; plotting sections.

Mechanical Engineering

Applied mechanics.—Force, mass, work, energy, power; force diagrams for simple framed structures; the link polygon; beams; bending moment and shearing force diagrams; stresses due to bending; moment of resistance; section moduli; torque in shafts, stresses due to torsion; stresses in thin shells; velocity and acceleration of a point moving in a circular path and with uniform speed; simple harmonic motion; relative velocity; velocity and acceleration diagrams of simple mechanisms; angular velocity and acceleration; impulse, momentum, torque; moment of momentum; moment of inertia and radius of gyration; centrifugal force; conservation of energy and of momentum; brakes and dynamometers.

Applied heat.—First law of thermodynamics; mechanical equivalent of heat; Boyle's law; Charles' Law; characteristic equation of a gas; total heat and internal energy; specific heats of gases; isothermal and adiabatic changes; second law of thermodynamics; indicator diagrams; properties of steam and use of steam tables; the Rankine cycle; adiabatic heat drop; ideal efficiency and efficiency ratio; indicated H.P. brake; H.P. mechanical efficiency; calculation of cylinder dimensions of simple and compound steam engines; engine tests; mixture of gases and vapours; internal combustion engines with special reference to the diesel engine and the gas turbine.

Colliery plant.—Boiler plant for collieries; comparison of types; auxiliary plant; fuels, the principles of combustion; calorific values; heat losses and efficiency of boiler plant; types of steam engines used at collieries; steam winders, valve and control gear; torque, power and velocity diagrams; steam turbines, types, outline of operation and control gear; steam accumulators and other auxiliary equipment; air compressions plant; reciprocating and turbo-compressors; accessories; transmission and utilisation of compressed air; types of locomotives for use in mines.

Modern developments in the design and use of machinery for surface and underground work.

Electrical Engineering

Voltage and current relations in single-phase and three-phase a.c. circuits.

Inductance, capacitance, impedance; vector representation; power and power factor in three-phase circuits and their measurement; power factor correction.

Voltage drop and power loss in d.c. and three-phase a.c. circuits; electric stress in cables; construction for high voltages; rectification; the contact rectifier; circuits and uses; the thermionic valve and its use as a rectifier; smoothing circuits; the mercury arc rectifier.

Three-phase transformation; the three-phase transformer; uses of star and delta connections.

Principles of synchronous and induction motors; starting methods and performance; general outline of rotary converter.

Generation.—Outline of alternators and their operation; load factor; machines in parallel; protection and control gear; earthing and leakage protection.

Transmission.—Transformers, substations and equipment; feeders, shaft cables; underground substations; underground supply systems; protection of circuits; flexible cables.

Applications.—Synchronous and induction motor, rating tests and characteristics; speed control; suitability of various types for mining machinery; electric winders in common use; Ward Leonard and Ilgner sets; control gear; remote control systems; protective system for coal face; electric drills and equipment.

Surveying

Measurement of distance.—The use of chains and steel tapes; accuracy of linear measurements; magnetic declination; surveying with miner's dial-manipulation, adjustment and use of various types of dials.

The theodolite.—Construction, use, manipulation and testing of the theodolite; surface and underground, traversing with the theodolite; adjustment of the closing error in a traverse.

Triangulation.—General description of the principles and practice of triangulation; brief description of the national grid and the correlation of mine surveys to the grid; plotting surveys by protractor and rectangular co-ordinates.

Levelling.—Use and adjustment of the surveyor's level, levelling staves and rods; plotting of profiles; precise levelling with special instruments and methods; methods of booking and reducing; effect of earth's curvature and refraction in levelling over long distances; principles of tacheometric surveying and levelling; special methods of underground levelling; underground bench marks; trigonometrical levelling.

Measurement of areas and volumes.—Computations, use of planimeter and computing scale; measurements of excavations, embankments and spoilheaps, etc.

Mining subsidence.—Its effects and methods of recording.

Correlation of underground and surface survey.—Plumb-wires in one vertical shaft and in two vertical shafts; traversing inclined shafts and various combinations; correlation by precise magnetic methods.

Underground setting out.—Establishment of fixed survey stations; setting out a point having given co-ordinates; giving and maintaining direction and gradient for inclined shafts, slopes and levels; consideration of the accuracy required for any given work; ranging curves for haulage roads; survey problems on cross-measure drifts and faults.

Maps and plans.—Construction and preservation of mine plans; standards of accuracy; large scale Ordnance maps.

Mining Law

Statutory requirements (including regulations and orders) relating to safety, health and conditions of employment in mines under the Coal Mines Act. Historical development of these requirements. Writing of reports.

Practical Experience Required by Applicants for Certificates of Competency: Notes Issued by the Mining Qualifications Board.

(Note.—These notes are subject to amendment from time to time as occasion demands. Separate copies can be obtained by interested persons from the Secretary to the Board.)

1. Applicants for first or second class certificates must normally have had not less than five years' practical experience in mining.

Rule 3 on p.187 should be studied carefully.

2. The Board is responsible for determining what, if any, reduction can be allowed in the required five years practical experience; but for the guidance of candidates examples of the kind of experience which the Board would be prepared to consider in deciding what reduction could be allowed in the case of a particular candidate having regard to the extent and variety of his experience are given below—

(a) the period of five years' practical experience referred to in Rule 3 (1) will be reduced to three years for a candidate holding an approved degree or diploma.

(b) The period of two years' experience referred to in Rule 3 (2) (a) (ii) will be reduced to one year and six calendar months for a candidate holding an approved degree or diploma.

The approved degrees and diplomas are listed in the second schedule to the rules (p.191).

(c) Practical experience under the National Coal Board's Scheme of Directed Practical Training for Mining Engineers will be accepted for the purposes of Rule 3.

(d) Practical experience, for a period not exceeding six months, obtained in engineering workshops either underground or on the surface which are definitely associated with mining machinery may, at the discretion of the Board, be accepted as part of the five years' practical experience referred to in Rule 3 (1) but not as part of the experience required in Rule 3 (2) (a) (ii) nor as part of the reduced period required of persons holding approved degrees or diplomas.

(e) The Board will be prepared to take into consideration for the purposes of Rule 3 (1)—

- (i) experience in metalliferous mines whether in the United Kingdom or overseas;
- (ii) experience of any kind of mining or tunnelling work below ground which may appear to be relevant.

3. Applicants are recommended to obtain a varied experience in mining but in order to comply with Rule 3 (2) (a) (ii) they *must* normally obtain the prescribed experience in the getting of minerals or work directly connected therewith at the face, and in setting of supports, or repairing, and stonework. It is hoped that it will be possible in future for employers to see that their employees, who are studying with a view to taking certificates of competency examinations, have an opportunity of obtaining the underground experience of all three types referred to in this subparagraph: they will be prepared, however, for the present to accept applications from candidates who have not had an opportunity to obtain such experience provided that an adequate proportion of the two years' underground experience has been spent in the getting of minerals or work at the face directly connected with such getting.

4. For the purposes of Rule 3 (2) (a) (ii)—

(a) The following duties rank as experience of getting minerals or of work directly connected therewith at the face—

- (i) coal hewer or other face worker; work on coal cutting or conveyor faces;
- (ii) stallman or contractor;
- (iii) shot firer (if duly qualified to act as such);
- (iv) fireman, examiner or deputy (if complying with Section 15 (1) of the Coal Mines Act, 1911);
- (v) overman (if complying with Regulation 18 (1) of the Coal Mines (Officials and Inspections) General Regulations, 1951).

(b) Experience in the following three categories may be obtained either at the working face or elsewhere in a mine—

- (i) stonework includes the driving of roads in stone, ripping or brushing, and taking down “top” or taking up “bottom”;
- (ii) setting of supports includes the withdrawal of supports from the goaf, waste or gob or from disused roadways;
- (iii) repairing includes the work necessary to keep the roads and working places in a safe and workable condition.

(c) A specific minimum period to be spent in each class of work has not been imposed, because the precise character of the whole of an applicant's practical experience in mining is taken into consideration by the Board at the appropriate time. It may be assumed, however, that in no circumstances would less than six

months' practical experience involving full shifts at the face, either in getting minerals or in work directly connected with such getting, be acceptable to the Board, and that the recognition of such a limited period would depend upon the character and period of the remainder of the mining duties performed.

(d) In explanation of the term "responsible control" used in Rule 3 (2) (a) (ii), the Board desire to intimate that the control need not necessarily be in a statutory post, but it must be real responsibility involving the actual control and direction of the work prescribed. Thus an applicant who conveys instructions from a superior official for certain work to be carried out would not be regarded as having exercised responsible control unless he actually gives the directions for the work and is personally responsible for its adequate completion. Statements respecting mining experience obtained in indefinite positions such as "assistant manager" or "assistant overman" should be supported by explanations of the precise duties performed and of the degree of responsibility exercised. The position held by the applicant under the Coal Mines Act, 1911 (or under the general regulations), should also be stated by the applicant in Form 9 and by his manager in Form 11.

5. The following kinds of experience will be acceptable, to an amount determinable by the Board, partly for the purposes of Rule 3(1) and partly for the purposes of Rule 3 (2) (a) (ii)—

(a) Full time employment in the application of water infusion or other dust suppression methods in and about the working face; but in no case will more than 6 months of such experience count for the purposes of Rule 3 (2) (a) (ii). (For dust sampling see paragraph 6(h) below.)

(b) Full time employment in the taking of samples of mine air at or near the working face; but in no case will more than 3 months of such experience count for the purposes of Rule 3 (2) (a) (ii).

6. Time spent in the following mining duties will be acceptable for the purposes of Rule 3 (1) but *not* for the purposes of Rule 3 (2) (a) (ii); as stated in paragraph 3 applicants are recommended to obtain a varied experience—

- (a) Travelling the pit in the company of an official.
- (b) Haulage worker.
- (c) Surveyor, assistant surveyor or linesman.
- (d) Bratticeman.
- (e) Sinker.
- (f) Onsetter.
- (g) Measuring ventilation and examining airways.
- (h) Taking supplies of road dust and of mine air in main airways.
- (i) Examining and reporting on compressed air mains or electrical distribution system.
- (j) Other forms of work performed underground at the discretion of the Board.

7. Applicants should note (a) that evidence of underground mining duties which have not been specified in paragraphs 4, 5 and 6 above will not be excluded from consideration by the Board at the appropriate time. A decision as to an applicant's eligibility is only given after receipt of a formal application to attend a particular examination.

8. **The Board will not take into account any experience expected to be obtained after the closing date for the receipt of applications.**

9. When submitting a formal application, particulars of the whole of an applicants' practical mining experience should be specified, in chronological order, in Form 9, which should be accompanied by the manager's verification in Form 11. *Experience will not be considered by the Board unless it is properly certified: special forms provided by the National Coal Board for Directed Practical Training candidates will be accepted in lieu of or in addition to Form 9.*

10. An applicant who claims mining experience obtained in mines abroad should insert particulars in Form 9, and should forward original testimonials giving details of such experience.

11. Candidates who hold approved degrees or diplomas are not admissible for examination if a period of five years (covering three years' satisfactory underground experience plus two years' allowance for the university or college course) has not been completed. Subject thereto, underground mining experience obtained during vacations will be recognised if, in the opinion of the Board, it complies with the rules.

12. Candidates who attended examinations for first-class or second-class certificates of competency—held by the Board before 1 March, 1934, are deemed to have satisfied the requirements of Rule 3 as regards mining experience.

Fees for Examinations and Copies of Certificates

| | <i>First Class</i> | <i>Second Class</i> |
|--|--------------------|---------------------|
| (i) For examination | £5 | £2 10s. |
| (ii) For re-examination in one or more subjects | £1 10s. | 15s. |
| (iii) Copy of certificate of competency ... | 7s. 6d. | 7s. 6d. |

C. SURVEYORS' CERTIFICATES

Mining Examinations (Surveyors) Rules, 1952

(Note—The following rules replace the Coal Mines (Prescription of Qualifications of Surveyors) Order, 1942, and are made under Section 9 of the Coal Mines Act, 1911, as amended by the Coal Mines (Surveyors and Plans) General Regulations, 1952 (see page 158). Part I read with Part II provides for the continuation of the present examination: read with Part III it introduces a new examination divided into three stages). The latter will run concurrently with the existing examinations which remains unchanged and will continue for another seven years at least.

The new examinations comprise a preliminary, intermediate and final stage. Exemption from all three stages will be granted to a candidate who has either reached such standard as may be required by the Board in the Higher National Certificate in mine surveying or passed the Joint Intermediate Examination of the Royal Institution of Chartered Surveyors and the Institute of Mining Surveyors.

All candidates will be required to pass the Board's oral and practical examination).

PART I

1. An applicant for a surveyor's certificate under the Coal Mines (Surveyors and Plans) General Regulations, 1952 (in these rules referred to as "an applicant") must comply with—

- (a) the provisions of this Part of these rules; and
- (b) the provisions of Part II or Part III of these rules.

2. An applicant must produce to the Board with his application, the following documents—

- (a) a birth certificate, or other evidence of his age satisfactory to the Board;
- (b) two testimonials, on forms provided for the purpose by the Board, of his good character; and
- (c) particulars of his experience in surveying mines referred to in Rule 3.

3. (1).—Subject to any reduction determined by the Board, an applicant must satisfy the Board that he has had not less than four years' experience in surveying mines.

(2).—The experience aforesaid must—

(a) include experience in surveying and levelling (including chain reading) below ground for periods amounting in all to not less than two thousand hours, subject to any reduction determined by the Board; and

(b) be experience—

- (i) in mines to which the Act applies; or
- (ii) partly in such mines during periods amounting in all to not less than one year and partly in mines (whether in the United Kingdom or elsewhere) with respect to which the Board are satisfied that they provided equivalent experience.

(3) Any reduction of experience as aforesaid shall be such reduction in respect of any qualification or experience (including performance of national service) acquired by the applicant as the Board may determine having regard to any directions given to them by the Minister.

4. An applicant who has complied with the provisions of Part II or Part III of these rules must qualify—

(a) at a practical examination held by the Board on the subjects of—

- (i) surveying on the surface (including the use and adjustments of a theodolite) and levelling (including the adjustments of the level and flying and sectional levelling);
- (ii) surveying below ground (including the use of a theodolite and level) and the correlation of surface and underground surveys; and
- (iii) office work relating to surveying (including the preparation of a plan and section); and

(b) at an oral examination held by the Board on the subjects of mining surveying and the mining legislation relating to surveyors and plans.

PART II

5. An applicant under this Part of these rules must qualify at a written examination held by the Board on the subjects specified in the first schedule to these rules.

PART III

6. An applicant under this Part of these rules must—either (1)

(a) be the holder of and produce to the Board with his application any one of the certificates specified in the second schedule to these rules;

(b) qualify at an intermediate written examination held by the Board on the subjects of mathematics, physics and chemistry, geology, surveying, elementary mining technology, and drawing; and

(c) qualify after attaining the age of 21 years at a final written examination held by the Board on the subjects of geology and surveying:

Provided that if an applicant—

- (i) was educated outside the United Kingdom and satisfies the Board that his standard of general education is equivalent to the standard required to be attained under paragraph (a), that paragraph shall not apply;
- (ii) is the holder of an ordinary national certificate in mining granted in respect of subjects approved by the Board, paragraph (b) shall not apply;

(iii) is the holder of any degree or diploma specified in the first part of the third schedule to these rules, has completed a course of study in mining surveying approved by the Board at any institution specified in the second part of the said schedule and has passed an examination of that institution held in relation thereto, or is an associate member of the Institution of Mining Engineers having passed such examinations of the Institution as the Board require, paragraphs (a) and (b) shall not apply;

or (2) be the holder of a higher national certificate in mining surveying having attained such standard in qualifying therefore as the Board may require, or have passed the Joint Intermediate Examination of the Royal Institution of Chartered Surveyors and the Institute of Mining Surveyors in the mining surveying section thereof.

PART IV

7. The times and places at which examinations are to be held under these rules shall be published by the Board in the *Ministry of Labour Gazette* and in such other publications as the Board may from time to time think fit.

FIRST SCHEDULE

Rule 5

Determination of magnetic declination.

Loose and fast needle surveying.

Calculation of areas and volumes.

Contour lines and levelling.

Traversing with the theodolite below ground and on the surface.

Triangulation.

Plans and sections of mines.

Ordnance Survey and geological maps.

Use, care and testing of instruments.

Making a survey of the workings of a mine and connecting such survey with a surface survey.

Making levellings.

Plotting surveys and levellings.

SECOND SCHEDULE

Rule 6(1)(a).

This schedule is the same as the first schedule to the Mining Examinations (Certificates of Competency) Rules, 1952 on page 189.

THIRD SCHEDULE

Rule 6(1) Proviso (iii)

Part I

This part of the schedule is the same as the second schedule to the Mining Examinations (Certificates of Competency) Rules, 1952, on page 191.

Part II

Name of institution providing course of study in mining surveying

Glamorgan Technical College, Treforest.

Glasgow University.

Heriot-Watt College, Edinburgh.

Leeds University.

Royal School of Mines, London.

Royal Technical College, Glasgow.

Sheffield University.

Technical College of Monmouthshire, Crumlin.

University College of South Wales and Monmouthshire.

Wigan and District Mining and Technical College.

Syllabus and Qualifying Standards for Surveyors' Certificates. Notes Issued by the Mining Qualifications Board.

(Note.—These notes are subject to amendment from time to time as occasion demands. Separate copies can be obtained by interested persons from the Secretary to the Board.)

WRITTEN EXAMINATION.

Syllabus.

1. Surveying, levelling and drawing:—Determination of magnetic declination; loose and fast needle surveying; calculation of areas and volumes; contour lines and levelling; traversing with the theodolite below ground and on surface; triangulation; plans and sections of mines; Ordnance Survey and geological maps; the use, care and testing of instruments; making a survey of the workings of a mine and connecting such survey with a surface survey; making levellings; plotting surveys and levellings.

2. Applicants must satisfy the Examining Board that they are competent—

- (1) to make an accurate survey of the workings of a mine and to connect such survey with a surface survey;
- (2) to make accurate levellings; and
- (3) to plot accurately surveys and levellings.

The maximum marks are 100.

Qualifying marks for entry to Oral and Practical Examinations

3. At least 60 out of 100 marks will qualify for entry to the oral and practical examination.

THE ORAL AND PRACTICAL EXAMINATION

4. This examination which takes place on three successive days will comprise—

- (1) surface tests (including use and adjustments of theodolite and sectional levelling);

- (2) underground tests (including use of theodolite); and
- (3) oral and office tests (including preparation of a plan).

5. Applicants are advised of the vital importance of adequate practice in the use of theodolite. Evidence of insufficient experience in the manipulation of surveying instruments militates against an applicant's prospects of passing the practical tests.

6. The use of Chambers Mathematical Tables, Bremiker's Tables of Common Logarithms, Shortrede's Tables of Logarithms, Sines and Tangents, and slide rules will be permitted at both the written and oral and practical examinations subject to such restrictions as may be determined by the Board or by the examiner presiding over the examinations.

7. The total marks in the oral and practical examination will be as follows—

| | |
|-------------------|-----------|
| Surface tests | 25 marks |
| Underground tests | 35 „ |
| Office work | 20 „ |
| Oral tests | 20 „ |
| <hr/> | |
| Total | 100 marks |

No applicant will qualify for a certificate unless he obtains at least half marks in each of the above four tests and at least 60 of the total marks.

QUALIFYING STANDARD AT COMBINED EXAMINATION

8. An applicant who obtains at least 65 marks in the written examination and also at least 50 in the oral and practical will, however, be eligible for re-examination at the next succeeding oral and practical examination without undergoing a further written examination.

Otherwise an applicant who qualifies in the written examination but fails to qualify in the subsequent oral and practical examination will be required to pass a further written examination before he can be admitted to a further oral and practical examination.

Fees for Examinations and Copies of Certificates.

| | | |
|--|--------|---------|
| (i) For whole examination | | £4 |
| (ii) For oral and practical re-examination | | £3 |
| (iii) Copy of certificate | | 7s. 6d. |

D. DEPUTIES' CERTIFICATES.

Mining Examinations (Deputies) Rules, 1952.

(As amended by the Mining Examinations (Deputies) (Amendment) Rules, 1952.)

(Note:—These rules were made under Section 15 of the Coal Mines Act as amended by the Coal Mines (Officials and Inspections) General Regulations, 1951. Persons desiring information about examinations for deputies' certificates should apply to any Local Education Authority

or Technical College in a mining area and not to the Mining Qualifications Board. With certain exceptions, no person is qualified to be appointed as a deputy for the first time unless he (a) is the holder of a certificate of competency or a deputies' certificate and (b) has within the previous five years obtained a gas testing and hearing certificate and a first-aid certificate. The details of these provisions are explained more fully in the Memorandum on the Coal Mines (Officials and Inspections) General Regulations.)*

PART I

QUALIFICATIONS FOR DEPUTY'S CERTIFICATE.

1. An applicant for a deputy's certificate must either—

(a) have—

- (i) reached the qualifying standard in one of the written examinations specified in Rule 4; and
- (ii) reached the qualifying standard in one of the practical tests specified in Rule 5; and
- (iii) subject to any reduction determined by the Board under Rule 3, had not less than four years' practical experience below ground in a mine, of which not less than 18 months was at the face of the workings; and
- (iv) attained an age not less than 23 years; or

(b) have—

- (i) reached the qualifying standard in one of the practical tests specified in Rule 5; and
- (ii) subject to any reduction determined by the Board under Rule 3, had not less than five years' practical experience below ground in a mine, of which not less than two years was at the face of the workings; and
- (iii) attained an age not less than 25 years.

APPLICATION FOR DEPUTY'S CERTIFICATE

2. Each application to the Board for a deputy's certificate must be accompanied by—

(a) the applicants' birth certificate, or other evidence of his age satisfactory to the Board; and

(b) particulars of his experience below ground in mines to which the Coal Mines Act, 1911, applies (including the periods of his employment in each category of work), certified by or on behalf of the managers of the mines in which he was so employed; and

(c) particulars of any experience below ground in a mine of any other class or description (including the periods of his employment and the categories of work) and

(d) any certificate held by him, referred to in Rule 4 or 5.

* H.M. Stationery Office, price 1s. 0d.

REDUCTION OF PRACTICAL EXPERIENCE FOR APPLICANTS WITH SPECIAL QUALIFICATIONS.

3. (1) The Board may in respect of the special qualifications or experience of any applicant for a deputy's certificate (including the performance of national service) reduce in his case the experience required under Rule 1 to periods not less than three years' practical experience below ground and one year at the face of the workings.

(2) An applicant, who desires the Board to reduce in his case the practical experience required, must attach to his application for a deputy's certificate particulars of any special qualifications or experience on which he relies.

WRITTEN EXAMINATIONS.

4. (1) An applicant has reached the qualifying standard in a written examination covering the elementary principles of safe mining practice (including elementary mining science) and the statutory requirements relating to a deputy's duties, if he—

(a) is the holder of a general or ordinary national certificate in mining; or

(b) has passed an examination held by the Board under these rules.

(2) In the examination held by the Board, an applicant must satisfy the examiners that he has sufficient knowledge of the statutory requirements relating to a deputy's duties (including those relating to inspections and reports) and of the following matters covering the elementary principles of safe mining practice (including elementary mining science)—

- (i) the elementary principles of mine ventilation and lighting; distribution of air below ground;
- (ii) the elementary principles of electricity and mechanics, and their application to mining;
- (iii) elementary geology of coal and associated rocks;
- (iv) methods of working (particularly methods of working at the face);
- (v) support and control of roof and sides;
- (vi) explosions, fires and inundations;
- (vii) breaking ground; shot firing;
- (viii) shaft equipment; pumps; coal face machinery; use of compressed air;
- (ix) haulage;

Provided that if any applicant is the holder of a shot firer's certificate granted to him under the Mining Examinations (Shot Firers) Rules, 1952, made by the Board, he shall not be required to be further examined about shot firing.

PRACTICAL TEST

5. (1) An applicant has reached the qualifying standard in a practical test of his ability to perform the statutory duties of a deputy if he—

(a) is the holder of a certificate granted on or after 1 *January*, 1950, and approved by the Board for the purposes of these rules; or

(b) has passed a practical test held by the Board under these rules.

(2) In the practical test held by the Board, an applicant must satisfy the examiners that he—

(a) has sufficient knowledge of the following matters to enable him to perform the duties of a deputy—

- (i) methods of working and haulage;
- (ii) nature of the atmosphere and mine gases; ventilation;
- (iii) support of roof and sides; withdrawal of supports;
- (iv) maintenance of direction of roadways;
- (v) flame and electric safety lamps;
- (vi) safety in use of machinery;
- (vii) fires; fire-fighting and equipment;
- (viii) duties of a shot firer;
- (ix) rules and regulations applying to safety and health in mines;

(b) can charge, prime and fire a shot; and

(c) can make reports adequate for a deputy, orally and in writing, on inspections:

Provided that if any applicant is the holder of a shot firer's certificate granted to him under the Mining Examinations (Shot Firers) Rules, 1952, made by the Board, he shall not be required to be further examined about shot firing.

PART II

GAS TESTING AND HEARING CERTIFICATES.

6. (1) A certificate to be held by a deputy concerning his ability to test for gas and his hearing shall be one—

(a) granted before 1 *June*, 1952, under paragraphs (b) or (c) of subsection (1) of Section 15 of the Coal Mines Act, 1911; or

(b) granted by the Board, by one of the bodies specified in paragraph (2), or by any other body approved by the Board for the purposes of this rule, certifying that he is able to make accurate tests for inflammable gas (so far as is practicable with a flame safety lamp), including the recognition of gas caps produced by atmospheres containing one and one quarter per cent. of inflammable gas, and is able in so far as concerns his hearing, to carry out the duties of a deputy efficiently.

(2) The bodies aforesaid are all universities and university colleges, and all such schools, colleges and institutions as are maintained or assisted by any local education authority.

FIRST-AID CERTIFICATE.

7. The certificate of proficiency in first aid to be held by a deputy shall be one granted by a society or body approved by the Minister for the purposes of Regulation 5 of the Coal Mines General Regulations (First Aid), 1930, that he is proficient in first aid.

SUPPLEMENTARY NOTE ON THE DEPUTIES' RULES.

Details of the approved certificates of qualification mentioned in Rule 5 (1) (a) will be published by the Board from time to time.

Fees for Deputies' Certificates.

| | | |
|---|--------|----------|
| (i) Fee payable by an applicant taking the practical test (Rule 5 (1) (b)) | | 25s. 0d. |
| (ii) Fee payable by an applicant holding an approved certificate (Rule 5 (1) (a)) | | 5s. 0d. |

E. SHOT FIRERS' CERTIFICATES

EXPLANATORY NOTE

Article 12 of the Coal Mines (Explosives) Order, 1951, specifies the qualifications for a person to be appointed or to be a shot firer in a coal mine. It comes into force in April 1953. From that date no person will be qualified to be appointed as a shot firer *for the first time* in any mine or part of a mine in which permitted explosives are required to be used unless he—

(a) is the holder of a certificate of competency or a shot firer's certificate;

(b) is at least 22 years of age (subject to a reduction of not more than one year in certain circumstances);

(c) has had at least three years' practical experience of the kind specified in the order;

(d) has within the previous five years obtained a certificate similar to that required by a deputy as to his ability to make accurate tests for inflammable gas; and

(e) (except in the case of the holder of a certificate of competency) has been employed for not less than five shifts in connection with the firing of shots under the close personal supervision of a shot firer.

Mining Examinations (Shot Firers) Rules, 1952.

1. An applicant for a shot firers' certificate must either—

(a) be the holder of a certificate of qualification in shot firing approved by the Board for the purposes of these rules; or

(b) satisfy the examiners at an oral and practical test held by the Board under these rules that he has sufficient knowledge of

the following matters to enable him to perform the statutory duties of a shot firer—

- (i) inflammable gas and gas testing (including tests with gas detection apparatus);
- (ii) dust suppression and fumes in relation to shot firing;
- (iii) use and handling of explosives and detonators;
- (iv) drilling and piacing of, and breaks in, shot holes;
- (v) shots fired singly and in rounds; use of delay detonators; testing of circuits and treatment of mis-fires; determination of danger zones and safe shelter; examinations after shot firing;
- (vi) the keeping of records; and
- (vii) the law relating to shot firers.

SUPPLEMENTARY NOTE ON THE SHOT FIRERS' RULES.

Persons desiring further information about the examinations for the new shot firers' certificate mentioned in the preceding rules should apply to the Secretary of the appropriate Divisional Committee of the Mining Qualifications Board (see list below).

Details of the approved certificates of qualification mentioned in Rule 1 (a) will be published by the Board from time to time.

Fees for Shot Firer's Certificate.

- | | | |
|---|--------|----------|
| (i) Fee payable by an applicant taking the oral and practical test (Rule 1 (b)) | | 15s. 0d. |
| (ii) Fee payable by an applicant holding an approved certificate (Rule 1 (a)) | | 5s. 0d. |

ADDRESSES OF SECRETARIES TO THE DIVISIONAL COMMITTEES

Scottish

Secretary to the Divisional Committee,
Mining Qualifications Board,
Scottish Division,
National Coal Board,
1, Eglington Crescent,
Edinburgh, 12.

Durham

Secretary to the Divisional Committee,
Mining Qualifications Board,
Durham Division,
National Coal Board,
" C " Floor,
Milburn House,
Newcastle-on-Tyne, 1.

Northern (N. & C.)

Secretary to the Divisional Committee,
Mining Qualifications Board,
Northern (N. & C.) Division,
National Coal Board,
Ellison Buildings,
Ellison Place,
Newcastle-on-Tyne, 1.

North Eastern

Secretary to the Divisional Committee,
Mining Qualifications Board,
North Eastern Division,
National Coal Board,
The Lodge,
South Parade,
Doncaster.

North Western

Secretary to the Divisional Committee,
Mining Qualifications Board,
North Western Division,
National Coal Board,
40, Portland Street,
Manchester, 1.

East Midlands

Secretary to the Divisional Committee,
Mining Qualifications Board,
East Midlands Division,
National Coal Board,
Sherwood Lodge,
Arnold,
Nottingham.

West Midlands

Secretary to the Divisional Committee,
Mining Qualifications Board,
West Midlands Division,
National Coal Board,
Himley Hall,
Nr. Dudley.

South Eastern

Secretary to the Divisional Committee,
Mining Qualifications Board,
South Eastern Division,
National Coal Board,
1-3, Waterloo Crescent,
Dover, Kent.

South Western

Secretary to the Divisional Committee,
Mining Qualifications Board,
South Western Division,
National Coal Board,
Institute of Engineers,
Park Place,
Cardiff.

PART FOUR.

Lists corrected to 31 December, 1952, of approvals granted in pursuance of the Coal Mines Act, 1911, and the regulations and orders made under the Act, and of certain types of certified apparatus.

DUST SUPPRESSION.

A. CERTIFIED DRILLS.

LIST OF MECHANICAL DRILLING APPLIANCES TESTED AND CERTIFIED AS COMPLYING WITH THE REQUIREMENTS FOR DUST SUPPRESSION SPECIFIED IN MINISTRY OF FUEL AND POWER TESTING MEMORANDUM NO. 9.

| Submitted by | Name of Rock Drill |
|---|--|
| 1. Climax Rock Drill and Engineering Works Ltd., Carn Brea, near Redruth, Cornwall. | F.2 Jackhammer Drill. Climax RV.238 (Wet) Jackhammer (Ventilated type). Climax RV.240 (Wet) Jackhammer (Ventilated type). |
| 2. Consolidated Pneumatic Tool Co. Ltd., 232 Dawes Road, London, S.W.6. | C.P.122 Rock Drill, Wet. C.P.220 do. C.P.42 do. |
| 3. Hardypick Ltd., Sheffield, 8. | B.6 Dry Drill. Fitted with Hardy W.A.3 Wet Attachment. B.6.W. Axially Water-fed Drill. B.6.B. Dry Drill. Fitted with Hardy W.A.3 Wet Attachment. B.6.B.W. Axially Water-fed Drill. Hardy's 60-pdr. W. Axially Water-fed Drill. |
| 4. Holman Bros. Ltd., Camborne, Cornwall. | S.L.9B Handril. S.L.240 Drifter Drill. S.L.10A Handril. S.L.200 Water-fed Rock Drill. S.L.250 Drifter Drill. Holman Silver Dart Drill. Holman Silver Bullet Handril. S.L.280 Drifter Drill. |
| 5. Ingersoll-Rand Co. Ltd., 165 Queen Victoria Street, London, E.C.4. | D.A.35 Rock Drill. |

B. APPROVED DUST TRAPS AND DUST ALLAYING DEVICES.

LIST OF TYPES OF TRAPS AND OTHER DEVICES APPROVED BY H.M. CHIEF INSPECTOR OF MINES FOR USE IN DUST SUPPRESSION.

| Submitted by | Name of Appliance |
|--|--|
| Bell & Smart Ltd., Engineers, Tottenham Street, London, W.1. | <i>Trewill Dust Trap.*</i> Hay Dust Trap (Improved Design). |
| Pyrene Co. Ltd., Great West Road, Brentford, Middlesex. | Pyrene Foam Dust-allaying Apparatus. |
| Do. | Pyrene Dust Trap. Large Model. |
| Do. | Pyrene Dust Trap. Small Model. |
| Charles Crofton & Co. (Engineers) Ltd., Church Bank Offices, Wallsend-on-Tyne. | "Victor" (or "Huwood") Electric Rotary Stone Drilling Machine—used with bits of eccentric type tipped with "Ardaloy" steel. |
| Do. | Ingersoll-Victor Compressed Air-driven Rotary Stone Drilling Machine—used with bits of eccentric type tipped with "Ardaloy" steel. |

* No longer manufactured.

| Submitted by | Name of Appliance |
|---|--------------------------------------|
| Tom Smith & Clarke Ltd., Castle Buildings, Swansea. | Collier Dust Trap (Modified Design). |
| Compressed Air Ltd., West Wharf Road, Cardiff. | Sgonina Mark VII Dust Trap. |
| Do. | Sgonina Mark V Dust Trap.* |
| Do. | Sgonina Mark VI Dust Trap.* |
| Partridge, Jones & John Paton, Ltd., Six Bells, Abertillery, Monmouthshire. | N.A. Dust Trap (Modified Design). |

* Approved for use only in Slate mines.

ELECTRICAL APPARATUS.

A. REMOTE CONTROL CIRCUITS.

LIST OF REMOTE CONTROL CIRCUITS CERTIFIED AS INTRINSICALLY SAFE.

| Submitted by | Name of Apparatus | Certificate No. |
|--|--|---|
| 1. Anderson, Boyes & Co., Ltd., Motherwell. | Remote Control Circuit Type C.H.402. | T/RC/16 |
| | Remote Control Circuit Types C.S.1. and C.S.2. | T/RC/34 |
| | Remote Control Circuit Type C.S.3. | T/RC/47 |
| | Type EL.1 Electrical Lookout Circuit. | T/RC/48 |
| 2. Baldwin & Francis Ltd., Eyre Street, Sheffield. | Remote Control and Interlock Circuits (Schemes A and B). | T/RC/14 |
| | Remote Control Circuit Type E.M.3. | T/RC/41 |
| | Remote Control Circuit Type E.M.2A. | T/RC/51 |
| | Type E.M.3 Electrical Lockout Circuit. | T/RC/46 |
| 3. Belmos Co., Ltd., Bells-hill, Lanarkshire. | Remote Control Circuit or Interlock Circuit. | T/RC/11 |
| 4. British Thomson-Houston Co., Ltd., Rugby. | Remote Control Circuit. | T/RC/2A |
| 5. James Dawkins & Co., Ltd., Kirkcaldy, Fife. | Electrical Interlocking Circuit. | T/RC/9 |
| 6. General Electric Co., Ltd., Birmingham. | Remote Control Circuit. | T/RC/6 |
| | Remote Control Circuit of the G.E.C. Gate-End Box, Type FMU2. | T/RC/38 |
| 7. Hardypick Ltd., Sheffield. | Remote Control Circuits. | } T/RC/4/1, T/RC/4/2, T/RC/4/3 and T/RC/4/4 |
| | Drill Control Circuit Type R.C.3. Operating Circuit of the Wigan "Electro-Mercury" Switch, Cat. No. 783. | |
| 8. Heyes & Co., Ltd., Wigan. | | T/RC/32 T/BR/129 |
| 9. M. & C. Switchgear Ltd., Glasgow. | Remote Control Circuit. | T/RC/7 |
| | Remote Control Circuits Types A.238E1 and A.256C1. | T/RC/12 |
| | Remote Control Circuit of the Type No. 1 Gate End Box. | T/RC/40 |

| Submitted by | Name of Apparatus | Certificate No. |
|--|---|---|
| 10. Metropolitan-Vickers Electrical Co., Ltd., Manchester. | Remote Control Circuits. Remote Control Circuits Types ISC/1 and ISC/2. Type ISC/Remote Control Circuit. Remote Control Circuits Types ISC/1 and ISC/2. | } T/RC/1 T/RC/2 and T/RC/2/1 T/RC/2/2 T/RC/43 T/RC/53 |
| 11. Partridge Wilson & Co., Ltd., Leicester. | Remote Control Circuit of the D.C. Injection Rectifier Type S.R.1. | T/RC/39 |
| 12. A. Reyrolle & Co., Ltd., Hebburn-on-Tyne. | Remote Control Circuit Type 1A. Type 4A Electrical Interlock Circuits. Remote Control Circuits Types 5 and 8. Remote Control Circuit Type 5A. Remote Control Circuit Type 9. Remote Control Circuit Type 11. Remote Control Circuit Type 12. Remote Control Circuit Type 13A. Remote Control Circuits Types 10A, 15 and 16. Remote Control Circuit Type No. 18. Remote Control Circuit Type 17. | T/RC/10/2 T/RC/10/3 T/RC/10/7 and T/RC/10/4 T/RC/10/7 T/RC/10/8 T/RC/10/9B T/RC/17 T/RC/19 T/RC/19 T/RC/44 T/RC/57 T/RC/5 |
| 13. Siemens-Schuckert (Great Britain) Ltd., Brentford. | Remote Control Circuit Type IS/2. | T/RC/62 |
| 14. Switchgear & Cowans Ltd., Old Trafford, Manchester. | Remote Control Circuit Type M.R.C.T. | T/RC/24 |
| 15. Victor Products (Wallsend) Ltd., Wallsend-on-Tyne. | Remote Control Circuits. Remote Control Circuit Type P.C.P.1. Type E.L.P.1. Earth Leakage and Electrical Lockout Circuit. Face Lighting Remote Control Circuit Type P.C.P.2. | T/RC/15 T/RC/58 T/RC/59 T/RC/60 |
| 16. Wallacetown Engineering Co., Ltd., Ayr. | Remote Control Circuit Type D.46 Remote Control Circuit No. I.S.1038. Remote Control Circuit Type A.52. | T/RC/33 T/RC/45 T/RC/61 |
| 17. Allen West & Co., Ltd., Brighton, 7. | Remote Control Circuit Type I.S.F. | T/RC/31 |
| 18. Hugh Wood & Co., Ltd., Gateshead-on-Tyne. | Remote Control Circuit Type RC/1. | T/RC/18 |

B. TELEPHONES AND SIGNALLING APPARATUS.

LIST OF APPROVED TYPES OF INTRINSICALLY SAFE SIGNALLING APPARATUS AND TELEPHONES

I.—D.C. SIGNALLING APPARATUS.

| Submitted by | Name of Apparatus | Certificate No. |
|---|---|-----------------|
| <i>(a) Bells</i> | | |
| 1. John Davis & Son (Derby) Ltd., Derby. | Davis-Derby Davisafest Bell (with or without indicator lamp). | T/BR/57 |
| 2. Ericsson Telephones Ltd., Nottingham. | Ericsson Types N.3030 (20 ohms) and N.3030A (30 ohms). | T/BR/63 |
| 3. General Electric Co., Ltd., London, W.C.1. | Magnet (or G.E.C.) Subter Bell (with or without L.4235 visual lamp indicator) Types L.4231 or L.4232. | T/BR/68 |
| | Magnet (or G.E.C.) Mine Bell, Types L.4225 and L.4226. | T/BR/62 |
| | Magnet (or G.E.C.) Mine Bell Type 2. | T/BR/75 |
| 4. Gent & Co. Ltd., Leicester. | Tangent Fig. 1084 Bell (25 or 10 ohms). | T/BR/56A |
| 5. Heyes & Co. Ltd., Wigan. | Handco Bell | T/BR/59 |
| | Heyesco Bell (30 or 60 ohms). | T/BR/58 |
| <i>(b) Relays</i> | | |
| 1. Automatic Telephone & Electric Co., Ltd., Liverpool. | A.T.M. 3,000 Relay. | T/BR/105 |
| 2. John Davis & Son (Derby) Ltd., Derby. | Davisafe Relay (50, 100, 250 or 500 ohms) | T/BR/65 |
| 3. Electric Power Plant Co., Nottingham. | Safe-Sign Visual Signal. | T/BR/71 |
| 4. Ericsson Telephones Ltd., Nottingham. | Ericsson D.C. Mining Relay Type N.7240. | T/BR/55 |
| 5. General Electric Co., Ltd., London, W.C.2. | Magnet (or G.E.C.) Cascade Relay. | T/BR/67 |
| | Magnet (or G.E.C.) Safety Relay (superseded by T/BR/155) | T/BR/61 |
| | Type L.4233 D.C. Relay. | T/BR/155 |
| 6. Gent & Co., Ltd., Leicester. | Tangent Fig. 1429 Relay. | T/BR/56B |
| 7. Heyes & Co., Ltd., Wigan. | Handco Relay (100, 250, or 500 ohms). | T/BR/54B |
| <i>(c) Relay Bells</i> | | |
| 1. John Davis & Son (Derby) Ltd., Derby. | Davis-Derby Bell-Relay (with or without indicator lamp). | T/BR/66 |
| 2. Gent & Co., Ltd., Leicester. | Tangent Fig. 1083 Relay-Bell. | T/BR/56 |
| 3. Heyes & Co., Ltd., Wigan. | Handco Relay-Bell (Relay 100, 250 or 500 ohms; Bell 25 ohms). | T/BR/76 |
| <i>(d) Signalling Systems</i> | | |
| 1. Automatic Telephone & Electric Co., Ltd., Liverpool. | A.T.M. Ten Point Haulage Indicator Type 43-P. | T/BR/117 |
| | A.T.M. Conductor to Driver Signalling System Type 48. | T/BR/135 |

| Submitted by | Name of Apparatus | Certificate No. |
|---|---|-----------------|
| 2. General Electric Co., Ltd., London, W.C.2. | Automatic Control System, for endless rope haulage. | T/BR/96 |
| | G.E.C. Positional Indicator, for rope haulage. | T/BR/107 |
| 3. Heyes & Co., Ltd., Wigan. | Wigan Haulage Signalling Indicator. | T/BR/134 |
| | (e) Sources of Current | |
| 1. General Electric Co., Ltd., London, W.C.2. | Magnet (or G.E.C.) 24-volt Dry Battery Unit. | T/BR/73 |
| 2. India Rubber Gutta Percha & Telegraph Works Co., Ltd., London, E.16. | Silvertown Safety Battery. | T/BR/148 |

Note.—Certificates issued prior to 1 May, 1933, are superseded by certificates of later date for corresponding types, and have been withdrawn, though they remain in force for apparatus already in use under the standard conditions.

II.—A.C. SIGNALLING APPARATUS.

| Submitted by | Name of Apparatus | Certificate No. |
|---|---|-----------------|
| | (a) Bells | |
| 1. John Davis & Son (Derby) Ltd., Derby. | Davisolac Mining Bell. | T/BR/115 |
| 2. Ericsson Telephones Ltd., Nottingham. | N.3109H Mining Bell. | T/BR/89 |
| | N.3111C Mining Bell. | T/BR/128 |
| | N.3130 Mining Bell. | T/BR/154 |
| 3. General Electric Co., Ltd., London, W.C.2. | L.4219 Mining Bell. | T/BR/87 |
| 4. Gent & Co., Ltd., Leicester. | Tangent Fig. 1094 Mining Bell. | T/BR/88 |
| 5. Heyes & Co., Ltd., Wigan. | Wigan Cat. No. 886 (or Cat. No. 887) Mining Bell. | T/BR/149 |
| | Wigan 890 Polarised A.C. Mining Bell. | T/BR/99 |
| | (b) Relays | |
| 1. John Davis & Son (Derby) Ltd., Derby. | Davis-Derby A.C. Davisafe Relay. | T/BR/104 |
| 2. General Electric Co., Ltd., London, W.C.2. | L.4223 Mining Relay. | T/BR/98 |
| 3. Gent & Co., Ltd., Leicester. | Tangent 1429A. A.C. Mining Relay. | T/BR/102 |
| 4. Heyes & Co., Ltd., Wigan. | Wigan A.C. Relay 893. | T/BR/108 |
| | (c) Signalling Systems | |
| 1. Automatic Telephone & Electric Co., Ltd., Liverpool. | A.T.M. Type 46 Staple Shaft Signalling System. | T/BR/124 |
| | A.T.M. Type 48 Rope Driven Man Haulage Signal System. | T/BR/133 |
| | Positional Haulage Signalling System. | T/BR/150 |
| 2. Westinghouse Brake & Signal Co., Ltd., London, N.1. | Westinghouse Mine Traffic Control Circuits. | T/BR/147 |

| Submitted by | Name of Apparatus | Certificate No. |
|---|---|---------------------------|
| | (d) Sources of Current | |
| 1. Automatic Telephone & Electric Co., Ltd., Liverpool. | A.T.M. A.C. Signalling Transformer Unit, T.2553. | } T/BR/97A } T/BR/100B |
| 2. Belmos Co., Ltd., Bellshill, Lanarkshire. | Type ST Mine Signalling Transformer for primary voltage ranges of 110, 230, 440, 500, 550 and 625. | T/BR/127 |
| 3. John Davis & Son (Derby) Ltd., Derby. | Type MB Signalling Transformer for primary voltage ranges of 110 130, 200, 230, 250, 440, 500, 550 and 600. | T/BR/90 |
| | Type SFT. 1 Bell Signalling Transformer (24 VA). | T/BR/140 |
| 4. Foster Transformers & Switchgear Ltd., London, S.W.19. | Types A, B & C Signalling Transformers for primary voltages of 400, 440, 500 and 650. | T/BR/101 |
| 5. General Electric Co., Ltd., London, W.C.2. | X.T. 5620 Signalling Transformer for primary voltage ranges of 110/125, 200/250. | T/BR/85 |
| 6. Gent & Co., Ltd., Leicester. | Tangent Fig. 1141 Bell Ringing Transformer for primary voltage ranges of 110/125, 200/250, 440/550 and 550/660. | T/BR/85A |
| 7. Heyes & Co., Ltd., Wigan. | Wigan A.C. Transformer Unit No. 895, 50 cycles, for primary voltages of 500 or 230; 40, 50 or 60 cycles for voltages of 90/120, 220/250, 400/550 and 600/650. | } T/BR/97 } T/BR/100B |
| | Wigan Mine Signalling Transformer No. 896 for primary voltage ranges of 90/120, 220/250, 400/550 and 600/650. | T/BR/100A |
| 8. M. & C. Switchgear, Ltd., Kirkintilloch, Glasgow. | Type T.3.P. Signalling Transformer for primary voltages of 110, 240, 400, 440, 500, 550, 600 and 650. | T/BR/157 |
| 9. Metropolitan-Vickers Electrical Co., Ltd., Manchester. | Type A.C.1 Mine Signalling Transformer for primary voltage ranges of 90/120, 220/250, 250/500, 400/550 and 600/650 | T/BR/100 |
| | Type AN24VA. Bell Signalling Transformer. | T/BR/138 |
| | Type AN 24VA Bell Signalling Transformer with primary windings designed for 600, 550, 440, 400 and 120 volts at 50 cycles, and 440 volts at 25 cycles. | T/BR/141 |
| 10. Wallacetown Engineering Co. Ltd., Ayr. | Types B47 and E49 Bell Signalling Transformers for primary voltages of 110, 240, 400, 450, 500, 550, and 650. | T/BR/151 |

III.—D.C./A.C. SIGNALLING APPARATUS.

| Submitted by | Name of Apparatus | Certificate No. |
|---|--|--|
| | (a) <i>Bells</i> | |
| 1. Automatic Telephone and Electric Co., Ltd., Liverpool. | A.T.M. Mining Bell AC/DC. | T/BR/122 |
| 2. Heyes & Co. Ltd., Wigan. | Wigan Cat. No. 899 (or Cat. No. 900) Signalling Bell (A.C. or D.C.). Wigan Cat. No. 899B (or 900B) Bell, AC/DC. | T/BR/121 T/BR/132 |
| | (b) <i>Relays</i> | |
| 1. Automatic Telephone & Electric Co. Ltd., Liverpool. | A.T.M. Ironclad AC/DC Mining Relay. | T/BR/125 |
| 2. John Davis & Son (Derby) Ltd., Derby. | Davis-Derby "Darell" AC/DC Relay. | T/BR/152 |
| 3. Gent & Co. Ltd., Leicester. | Gent Mining Relay Fig. 1489. | T/BR/137 |
| 4. Heyes & Co. Ltd., Wigan. | Wigan Cat. No. 786 AC/DC Relay. Wigan Cat. No. 786A AC/DC Relay. Wigan Cat. No. 786B AC/DC Relay. Wigan Cat. No. 782 Latch Relay AC/DC. | T/BR/126 T/BR/130 T/BR/136 T/BR/131 |
| 5. Westinghouse Brake & Signal Co. Ltd., London, N.1. | Electro-Pneumatic Valve Unit Type A. | T/BR/153 |

IV.—MAGNETO-CALL TELEPHONE APPARATUS.

| Submitted by | Name of Apparatus | Certificate No. |
|--|--|--|
| | (a) <i>Telephones</i> | |
| 1. Automatic Telephone & Electric Co. Ltd., Liverpool. | A.T.M. T.3904, for surface use only. T.3903, Desk Type. A.T.M. 39 (or 42) Ironclad Magneto Wall Telephone. A.T.M. 43 B.M.S. A.T.M. 43 A.M.S. Sound Powered Telephone. Type A.T.M. 47 Ironclad Magneto Mining Telephone (including variant for surface use). | T/TEL/8 T/TEL/8 T/TEL/56 T/TEL/70 T/TEL/71 T/TEL/77 |
| 2. Ericsson Telephones Ltd., Nottingham. | Ericsson Types N.2982 and N.2972; N.2984 and N.2974. Ericsson Magneto Wall Telephone N.2504. Ericsson Magneto Telephone Type N.2961. Ericsson Wall N.2202. N.2518 (for surface use). | T/TEL/2C T/TEL/2E T/TEL/19 T/TEL/66 T/TEL/66 |

| Submitted by | Name of Apparatus | Certificate No. |
|---|--|--|
| 2. Ericsson Telephones Ltd., Nottingham —continued | Ericsson Table, N.2155B (for surface use). Ericsson Type 2121Z Mining Table Telephone (for surface use). Types N.2976 and N.2986 Mining Magneto Wall Telephone. Type N.2519 Mining Magneto Wall Telephone (for surface use). | T/TEL/36 T/TEL/82 T/TEL/84 T/TEL/86 |
| 3. General Electric Co., Ltd., London, W.C.2. | Magneto-Call Mining Telephone, K.8100 (including wall and desk types). K.8099. | T/TEL/17 T/TEL/17 |
| 4. Gent & Co., Ltd., Leicester. | Tangent 2125E Magneto Mining Telephone. Tangent 2126 Magneto Mining Telephone. | T/TEL/7/1 T/TEL/73 |
| 5. Heyes & Co., Ltd., Wigan. | Wigan Mining Magneto-Telephone, 1445 (including variation for surface use). 1445B. 1445C. 1447 (for surface use). 1448 (iron-clad). Wigan Desk Pattern Surface Type Magneto-Telephone. Wigan Desk Pattern Magneto Telephone. | T/TEL/13 T/TEL/72 T/TEL/72 T/TEL/72 T/TEL/33 T/TEL/8A |
| 6. Siemens Bros. & Co., Ltd., Woolwich, S.E.18. | Siemens Mining Magneto-Telephone, Q.3597. | T/TEL/2G |
| 7. Siemens-Schuckert (Gt. Britain) Ltd., London, E.C.4. | Siemens & Halske Mining Telephone, G.S. Wast 2A. | T/TEL/9 |
| 8. Telephone Manufacturing Co., Ltd., London, S.E.27. | Batteryless Telephone Type L.50. Batteryless Telephone Type L.50A. | T/TEL/85 T/TEL/85 |
| 1. Automatic Telephone & Electric Co., Ltd., Liverpool. | (b) <i>Extension Bells</i> Type A.T.M. Mining Extension Bell. Type 42 Extension Bell. Type M46. MA1 Magneto Telephone Bell. | T/TEL/26A T/TEL/56B T/TEL/87 |
| 2. Ericsson Telephones Ltd., Nottingham. | Ericsson Mining Magneto-Telephone Extension Bell, N.3109D. Type N.2155B Telephone Bell (for surface use only). Ericsson Mining Magneto Extension Bell, Type N.3111. | T/TEL/2G T/TEL/36 T/TEL/76 |
| 3. General Electric Co., Ltd., London, W.C.2. | Magneto Extension Bell, K.8312. | T/TEL/17B |
| 4. Gent & Co., Ltd., Leicester. | Tangent Fig. 2126B. Extension Bell. | T/TEL/73 |
| 5. Heyes & Co., Ltd., Wigan. | Wigan Magneto Telephone Extension Bell. | T/TEL/26 |

| Submitted by | Name of Apparatus. | Certificate No. |
|---|---|----------------------------|
| | <i>(c) Switchboards</i> | |
| 1. Automatic Telephone & Electric Co., Ltd., Liverpool. | A.T.M. Cordless Telephone Switchboard (including wood-cased variant). | T/TEL/25 |
| 2. Ericsson Telephones Ltd., Nottingham. | Ericsson Cardless Mining Magneto Switchboards N.510, N.515 and N.550 and 510 and 550 with lamp indicator for surface use. | T/TEL/2F |
| | Ericsson Cord Mining Magneto Switchboard N.570. | T/TEL/2F |
| | Ericsson Cordless Mining Magneto Telephone Switchboards Types N.555 and N.513. | T/TEL/83 |
| 3. General Electric Co. Ltd., London, W.C.2. | G.E.C. Mine Telephone Switchboard (12.3.34). | T/TEL/21 |
| | G.E.C. Mine Telephone Switchboard (21.4.38). | T/TEL/44 |
| 4. Gent & Co., Ltd., Leicester. | Tangent 2181 Telephone Switchboard (including wood-cased variant). | { T/TEL/24 and T/TEL/59 |
| 5. Heyes & Co., Ltd., Wigan. | Wigan Mining Type Cordless Telephone Switchboard (including wood-cased variant). | T/TEL/20 |
| | <i>(d) Coupling Units</i> | |
| 1. Automatic Telephone & Electric Co., Ltd. | A.T.M. Coupling Unit. | T/TEL/39A |
| | P.A.X. Coupling System. | T/TEL/68 |
| | 45 A.X. Coupling System. | T/TEL/68/1 |
| | Type 38 A.T.M. Coupling Unit. | T/TEL/79 |
| 2. Ericsson Telephones Ltd., Nottingham. | Ericsson Telephone Coupling Unit. | T/TEL/41 |
| 3. General Electric Co., Ltd., London, W.C.2. | Genelex Telephone Coupling Unit. | T/TEL/41A |
| 4. Heyes & Co., Ltd., Wigan. | Wigan Telephone Coupling Unit. | T/TEL/39 |
| | Wigan Coupling Unit, No. 1456 (including wood-cased variant Cat. No. 1451). | T/TEL/60 |
| 5. Reliance Telephone Co. Ltd., London, W.C.2. | P.A.X. Telephone Coupling Unit. | T/TEL/54 |

V.—BATTERY-CALL TELEPHONE APPARATUS.

| Submitted by | Name of Apparatus | Certificate No. |
|---|--|-----------------|
| | <i>(a) Telephones (External Battery)</i> | |
| 1. Ericsson Telephones Ltd., Nottingham. | Battery-Call Mining Telephone N.1150. | T/TEL/11 |
| 2. General Electric Co., Ltd., London, W.C.2. | Genelex Battery-Call Mining Telephone, K.8090. | T/TEL/11B |
| | G.E.C. Battery-Call Relay Telephone K.8090. | T/TEL/45 |
| | K.8094 desk or wall-type. | T/TEL/45 |

| Submitted by | Name of Apparatus | Certificate No. |
|--|---|-----------------|
| 3. Gent & Co., Ltd., Leicester. | Tangent 2124 Battery-Call Mining Telephone. | T/TEL/16 |
| | Tangent 2124A Telephone (or 2136A wood-cased variant) 2174 Relay Unit. | T/TEL/62 |
| | Tangent 2124B Battery-Call Mining Telephone. | T/TEL/81 |
| 4. Heyes & Co., Ltd., Wigan. | Wigan 1440 Battery-Cell Tele- phone (including wood-cased variant). | T/TEL/32 |
| | Wigan Battery-Call Telephone "P". | T/TEL/32 |
| Heyes & Co., Ltd., Wigan. | (b) <i>Telephone (Internal Battery)</i> Wigan Handco Battery Mining Type Relay-Telephone (in- cluding wood-cased variant). | T/TEL/15 |
| | (c) <i>Switchboards</i> | |
| 1. Ericsson Telephones Ltd., Nottingham. | Ericsson Cordless Mining Battery-Call Switchboard, N.530. | T/TEL/18 |
| 2. General Electric Co., Ltd., London, W.C.2. | G.E.C. Mine Telephone Switch- board K.8336B. | T/TEL/21A |
| 3. Gent & Co., Ltd., Leicester. | Tangent Auto-Call System com- prising 2181 Battery-Call Switchboard and 2174 Relay Units. | T/TEL/65 |
| 4. Heyes & Co., Ltd., Wigan. | Wigan Handco Relay Telephone Switchboard. | T/TEL/35 |
| | (d) <i>Coupling Units</i> | |
| 1. Ericsson Telephones Ltd., Nottingham. | Automatic and C.B. Telephone Link Unit. | T/TEL/89 |
| 2. Heyes & Co., Ltd., Wigan. | Wigan Relay Telephone Coup- ling Unit, 1380 (iron cased) and 1381 (wood-cased). | T/TEL/57 |

VI.—MAGNETO-CALL BATTERY-CALL TELEPHONE APPARATUS.

| Submitted by | Name of Apparatus | Certificate No. |
|--|---|-----------------|
| Gent & Co., Ltd., Leicester. | (a) <i>Switchboards</i> Tangent 2181 Telephone Switch- board (magneto-operated or battery-operated Board) (in- cluding wood-cased variant). | T/TEL/59 |
| Automatic Telephone and Electric Co., Ltd., Liverpool. | (b) <i>Coupling Units</i> A.T.M. Telephone Safety Coupler Type M.954/1 for Magneto- call or battery-call telephones. | T/TEL/63 |

VII.—PORTABLE TELEPHONES.

| Submitted by | Name of Apparatus | Certificate No. |
|---|--|-----------------------------------|
| 1. Ericsson Telephones Ltd., Nottingham. | Ericsson Mine Rescue Telephone (18.6.38). Mine Rescue Telephone (31.8.48). Portable Magneto Mining Telephone, Type N.1846. | T/TEL/28A T/TEL/78 T/TEL/80 |
| 2. Heyes & Co., Ltd., Wigan. | Wigan Portable Battery-Call Telephone. " Wigan " Portable Magneto Telephone Cat. No. 1454. | T/TEL/55 T/TEL/88 |
| 3. Telephone Manufacturing Co., Ltd., London, S.E.27. | Batteryless Telephone Type L51. | T/TEL/85 |

VIII.—SUPPLEMENTARY APPARATUS.

| Submitted by | Name of Apparatus | Certificate No. |
|---|--|----------------------------------|
| <i>(a) Accessories to Magneto Telephones.</i> | | |
| 1. Automatic Telephone & Electric Co., Ltd., Liverpool. | A.T.M. Party-Line Delayed Ringing Circuit. Post Office Type 3000 Relay. | T/TEL/47 T/TEL/71A |
| 2. Ericsson Telephones Ltd., Nottingham. | Ericsson Mining Magneto-Telephone Indicator-Relay, N.8652. Ericsson Magneto-Telephone Relay, N.7236. Ericsson N.7247 Telephone Relay | T/TEL/2F T/TEL/12 T/TEL/90 |
| 3. Gent & Co., Ltd., Leicester. | Tangent 1429A Magneto-Telephone Relay. Tangent 2134 Mining Telephone Delay Call Unit. | T/TEL/51 T/TEL/75 |
| 4. Heyes & Co., Ltd., Wigan. | Wigan Magneto Extension Relay. | T/TEL/61 |
| <i>(b) Accessories to Magneto-Call/Battery-Call Telephones.</i> | | |
| 1. Ericsson Telephones Ltd., Nottingham. | Ericsson Mining Code-Ringing Delay Unit. | T/TEL/48 |
| 2. General Electric Co., Ltd., London, W.C.2. | Magneto Call or Battery-call Telephone Delayed Action Relay. | T/TEL/67 |

C. OTHER INTRINSICALLY SAFE APPARATUS.

I. LIST OF MISCELLANEOUS ELECTRICAL APPARATUS (OTHER THAN FOR SIGNALLING PURPOSES) CERTIFIED AS INTRINSICALLY SAFE.

| Submitted by | Name of Apparatus | Certificate No. |
|--|---|----------------------|
| 1. C. F. Casella & Co., Ltd., Fitzroy Square, London, W.1. | Thermal Precipitator. | T/MISC./101 |
| 2. Elliot Bros. (London) Ltd., London, S.E.13. | Shotter Transmission Equipment (water level indicator) | T/MISC./189 |
| 3. Evershed & Vignoles Ltd., Chiswick, London. | Evershed Electronic Repeater System Evershed " Noflote " Pump Control Equipment. | T/BR/146 T/BR/145 |

| Submitted by | Name of Apparatus | Certificate No. |
|--|---------------------------|-----------------|
| 4. E. Leitz (London), 20 Mortimer Street, London, W.1. | Tyndallometer. | T/MISC./145 |
| 5. Pyroban Developments Ltd., Manchester, 1. | Pero Pyroban Fire Dector. | T/BR/144 |

II. LIST OF TESTING INSTRUMENTS CERTIFIED AS INTRINSICALLY SAFE.

| Submitted by | Name of Apparatus | Certificate No. |
|--|--|-----------------|
| 1. John Davis & Son (Derby) Ltd., Derby. | *Circuit Testing Ohmmeter range 0-300 ohms. | T/EXP/35 |
| 2. Electronic & X-ray Applications Ltd., 17 Pennant Mews, London, W.8. | Davis Derby Listening Device. | T/TI/20 |
| | Exal Fractional Ohmmeter. | T/TI/13 |
| 3. Evershed & Vignoles Ltd., Chiswick, London | *Safety Ohmmeter Cat. Nos. 70078 and 70079 (range 0-100 ohms). | T/TI/7 |
| | Constant Pressure MEG Insulation Testers, Cat. Nos. 54006, 54007, 54008 and 54009. | T/TI/8A |
| | Constant Pressure MEG Insulation and Continuity Testers Cat. Nos. 54234, 54254, 54274 and 54294. | T/TI/8B |
| | Bridge MEG Testers Cat. Nos. 67003 and 67004. | T/TI/8C |
| | Megger Testing Sets Cat. Nos. 35008 and 35009. | T/TI/12 |
| 4. General Electric Co., Ltd., London, W.C.2. | Magnet Continuity Testing Set. M5305 Galvanometer. | T/BR/53 |
| | Earth Continuity Tester, M.4146. | T/TI/3 |
| 5. Heyes & Co., Ltd., Wigan. | Wigan Intrinsic Testing Instrument (for D.C. bells and relays). | T/TI/16 |
| | | T/BR/82 |

* Instruments approved as circuit testing devices in pursuance of paragraph (11) of Article 25 of the Coal Mines (Explosives) Order, 1951, see page 253.

PERMITTED EXPLOSIVES AND BLASTING APPLIANCES

A. LIST OF THE EXPLOSIVES PERMITTED UNDER PART II OF THE COAL MINES (EXPLOSIVES) ORDER, 1951.

Notes: (Parts 1 and 2 only).—The explosives marked “(S)” are permitted either with or without an external sheath, and may be supplied and used in either state. In the former state they are known as “Sheathed Explosives”. An explosive marked “(Eq.S.)” is one which, without sheath, is certified to be not less safe than an equivalent sheathed explosive of the same group. The explosives marked “*” are either not manufactured in Great Britain or are manufactured for export only.

PART 1.—EXPLOSIVES PERMITTED FOR GENERAL USE. PERMISSIBLE MAXIMUM CHARGE 28 OZ.†

SECTION A(I). NITROGLYCERINE EXPLOSIVES, GELATINOUS TYPE.

| | |
|----------------------------------|---------------------------|
| *Ajax (S) | †Polar Ajax (S) |
| †Antifrost Gelammonite No. 2 (S) | †Polar Saxonite No. 3 (S) |
| †Antifrost Nitrox No. 2 (S) | *Samsonite No. 3 (S) |
| †Driftex (S) | *Saxonite (S) |
| †Driftex P (S) | *Saxonite No. 1 |
| †Plastex No. 1 (S) | *Stonobel (S) |
| †Plastex P. (S) | |

SECTION A(II). NITROGLYCERINE EXPLOSIVES, POWDERY TYPE.

| | |
|-------------------------------------|---------------------------|
| Antifrost Penrhyn Powder (S) | Nobels Explosive No. 1026 |
| †Antifrost Penrhyn Powder No. 2 (S) | Nobels Explosive No. 1105 |
| Bettacol (S) | Pencol (Eq.S) |
| Colex No. 1 (S) | *Polar A.2. Monobel (S) |
| Colex No. 2 (S) | Polar A3 Monobel (S) |
| Compex No. 1 (Eq.S) | Polar Dynobel No. 2 (S) |
| *Dynobel No. 2 (S) | Polar Thames Powder (S) |
| Equicol (Eq.S) | Polar Viking (S) |
| Equinox (Eq.S) | †Simex No. 3 (S) |
| Espex (Eq.S) | *Super Ammodyne |
| Eversoft Tees Powder (S) | Unibel (Eq.S) |
| Gelespex (Eq.S) | Unibel H. (Eq.S) |
| Minex (S) | Unifrax (Eq.S) |
| *Monobel No. 1 | Unigex (Eq.S) |
| *Morcol | Unigex H. (Eq.S) |
| Nobels Explosive No. 944 | Unikol (Eq.S) |
| Nobels Explosive No. 964 | Wincoal Extra (S) |

SECTION B.—NON-NITROGLYCERINE EXPLOSIVES.

| | |
|--------------------|-----------------------|
| †Celmonite | Norsabite (S) |
| Douglas Powder (S) | Tolumite No. 1 (Eq.S) |
| Gathurst Powder | Tuthilite |
| Hawkite No. 2 (S) | †X.L. Hawkite (S) |
| Hawkite No. 3 (S) | |

PART 2.—EXPLOSIVES PERMITTED ONLY FOR BRINGING DOWN COAL. PERMISSIBLE MAXIMUM CHARGE 18 OZ.

NITROGLYCERINE EXPLOSIVES, POWDERY TYPE.

| | |
|------------------|-----------------|
| A.1. Rounkol (S) | Lodensite No. 2 |
| A.1 Rounkol c | Lodex (S) |
| Antislak P. (S) | |

† For explosives marked † when used in the form of unsheathed cartridges of a certain minimum weight and diameter, the maximum permitted charge for shot firing in stone drifts only is 48 oz.

**PART 3.—LIST OF CARDOX AND HYDROX CARTRIDGES PERMITTED UNDER
THE COAL MINES (CARDOX AND HYDROX) ORDER, 1941.**

Cardox Cartridges.

| Type | Diameter | Charge (CO ₂) | Disc | Cardox Safety Heater Type | Alternative Heater Type |
|--------|----------|------------------------------|---------|---------------------------------|-------------------------------|
| | Inches | Oz. | Inch | | |
| E28 | 1½ | 14±2 | { 3/32 | D 47.5 | D 47.5* |
| | | | { 7/64 | D 55 | D 55* |
| | | | { 1/8 | D 65 | D 65* |
| | | | { 9/64 | D 75 | D 75* |
| E33 | 1½ | 17±2 | { 3/32 | D 55 | D 55* |
| | | | { 7/64 | D 65 | D 65* |
| | | | { 1/8 | D 75 | D 75* |
| B9 | 1¾ | 4±1 | { 9/64 | D 90 | D 90* |
| B20 | 1¾ | 10±2 | { 7/64 | D 27.5 | D 27.5* |
| | | | { 9/64 | | |
| B37 | 1¾ | 21±2 | { 7/64 | D 45 | B 38 or D 45* |
| | | | { 9/64 | D 62.5 | B 38 or D 62.5* |
| F57 | 2 | 29±3 | { 7/64 | D 62.5 | B47.5 or D62.5* |
| | | | { 9/64 | D 77.5 | B62.5 or D77.5* |
| | | | { 3/32 | D 50 | D 50* |
| | | | { 9/64 | D 77.5 | D 77.5* |
| C74 | 2½ | 44±4 | { 11/64 | D 100 | D 100* |
| | | | { 13/64 | D 115 | D 115* |
| | | | { 1/8 | D 75 | B 50 or D 75* |
| | | | { 3/16 | D 120 | B 80 or D 120* |
| LP/2 | 2 | 43±3 | { 7/32 | D 145 | D 145* |
| | | | { 3/32 | D 62.5 | D 62.5* |
| LP/2S | 2 | 21±3 | { 9/64 | D 77.5 | D 77.5* |
| | | | { 3/32 | D 45 | D 45* |
| LP/2½ | 2½ | 58±6 | { 9/64 | D 62.5 | D 62.5* |
| | | | { 1/8 | D 75 or D 90 | D 75* or D 90* |
| LP/2½L | 2½ | 96±6 | { 3/16 | D 120 or D 145 | D 120* or D145* |
| | | | { 1/8 | D 100 | D 100* |
| | | | { 3/16 | D 160 | D 160* |

* With powder fuse igniter.

Hydrox Cartridges.

| Type | Diameter | Charge (Hydrox Powder) | Disc | Igniter |
|------|----------|------------------------------|------|--------------|
| | Inches | Grams. | Inch | |
| C74 | 2½ | 800 | 3/16 | Hydrox No. 2 |
| B37 | 1¾ | 400 | 7/64 | |
| | | 450 | 1/8 | Hydrox No. 3 |
| | | 480 | 9/64 | |

B. SHOT FIRING APPARATUS.

(1) LIST OF TYPES OF APPARATUS APPROVED FOR FIRING ALL EXPLOSIVES (ARTICLE 14 (2) OF THE COAL MINES (EXPLOSIVES) ORDER, 1951).*

| Submitted by | Name of Apparatus |
|--|--|
| MAGNETO EXPLODERS. | |
| <i>(i) Low Tension (for single shots).</i> | |
| 1. British Electrical & Manufacturing Co., 7/13 Clavering Place, Newcastle-on-Tyne, 1. | Monarch 1-Shot L.T. |
| 2. John Davis & Son (Derby) Ltd., All Saints Works, Derby. | Davis No. 15X (1932) L.T. Davis-Derby "Demon" L.T. Davis "Little Demon" L.T. G.E.C. No. L5144C L.T. |
| 3. General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2. | |
| 4. Marston Excelsior Ltd., Wobaston, Fordhouses, Wolverhampton. | Little Demon L.T. |
| <i>(ii) High Tension (for single shots).</i> | |
| 1. British Electrical & Manufacturing Co., 7/13 Clavering Place, Newcastle-on-Tyne, 1. | Monarch 1-Shot H.T. |
| 2. John Davis & Son (Derby) Ltd., All Saints Works, Derby. | Davis Derby "Demon" H.T. Davis "Little Demon" H.T. G.E.C. No. L5143C H.T. |
| 3. General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2. | |
| BATTERY EXPLODERS. | |
| <i>(i) Low Tension (for single shots).</i> | |
| 1. John Davis & Son (Derby) Ltd., All Saints Works, Derby. | Davis (1932) L.T. |
| 2. General Electric Co. Ltd., Magnet House, Kingsway, London, W.C.2. | G.E.C. (1933) L.T. |
| <i>(ii) Multi-shot.</i> | |
| 1. John Davis & Son (Derby) Ltd., All Saints Works, Derby. | Davis-Derby Multi-shot L.T. "Derby" 6-shot L.T. "Derby" 6-shot L.T. |
| 2. Marston Excelsior Ltd., Wobaston, Fordhouses, Wolverhampton. | |

(11) LIST OF TYPES OF APPARATUS APPROVED FOR FIRING NON-PERMITTED EXPLOSIVES ONLY

(ARTICLE 14 (3) OF THE COAL MINES (EXPLOSIVES) ORDER, 1951)†

| Submitted by | Name of Apparatus |
|--|--|
| Marston Excelsior Ltd., Wobaston, Fordhouses, Wolverhampton. | Beethoven Dynamo-Condenser Type Mark II 100-Shot. Schaffler Type ABFG 50-Shot. |

* Apparatus approved for firing all explosives is marked (P); apparatus approved for firing non-permitted explosives only is marked (N).

FIREDAMP DETECTORS.

(APPROVED IN PURSUANCE OF NO. 1(b) OF THE COAL MINES GENERAL REGULATIONS (FIREDAMP DETECTORS), 1939)

LIST OF APPROVED TYPES.

1.—(a) Every approved type of flame safety hand lamp shall be deemed to be an approved type of firedamp detector, with the exception of types which are either—

- (i) not capable of giving a working light throughout the shift; or
- (ii) fitted with a self-contained relighting device; or
- (iii) fitted with copper gauzes.

(b) A flame lamp which does not comply with the minimum standard of lighting laid down in general regulations shall not be used in any place in the mine to which such standard applies, except with the written permission of the manager and as a supplementary lamp.

| Name of Apparatus | Date of Approval |
|---|-----------------------------------|
| 2. Ringrose Automatic Firedamp Alarm. | 23 March, 1939 |
| 3. Ringrose Miner's Lamp Type C.H.4. | 23 March, 1939 |
| 4. Ringrose Automatic Firedamp Alarm, Type 47/125. | { 28 April, 1948 4 April, 1952 |
| 5. Naylor Spiralarm Type M. | 26 November, 1949 |
| 6. Cambrian No. 3M Lamp. | 28 October, 1949 |

FIRST AID.

LIST OF SOCIETIES AND OTHER BODIES APPROVED FOR THE PURPOSE OF GRANTING CERTIFICATES OF PROFICIENCY IN FIRST AID.*

The Minister is advised that only certificates obtained subsequent to the date of approval can be considered as qualifying for the purposes of the regulations and rules.

| | <i>Date of approval.</i> |
|-------------------------------------|--------------------------|
| Birmingham University | 5 June, 1915. |
| British Red Cross Society | 11 May, 1915. |
| Glamorganshire Education Committee† | 2 February, 1915. |
| Heriot-Watt College, Edinburgh | 9 February, 1915. |
| King's College, Newcastle-upon-Tyne | 19 June, 1939. |
| Leeds University | 8 May, 1950. |
| St. Andrew's Association | 10 July, 1913. |
| St. John Ambulance Association | 10 July, 1913. |

* See paragraph (iv) of the first part of the second schedule to the Coal Mines General Regulations (Rescue), 1928, page 146, Regulations 5 and 7 of the Coal Mines General Regulations (First Aid), 1930, page 88; and Rule 2 of the Mining Examinations (Certificate of Competency) Rules, 1952, page 186.

† Certificates not issued by this body since 1932, but examinations on its behalf are conducted by St. John Ambulance Association.

LIGHTING.

A. LIST OF APPROVED SAFETY LAMPS.

LIST OF SAFETY LAMPS APPROVED IN PURSUANCE OF SECTION 33 OF THE COAL MINES ACT, 1911 (AS AMENDED BY THE COAL MINES GENERAL REGULATIONS (SAFETY LAMPS), 1927) AND OF THE COAL MINES (LIGHTING) GENERAL REGULATIONS, 1947—

1. *Schedule A (or Lighting Schedule).*

Types of lamps approved as complying with the standard of lighting performance prescribed under Regulation 5 (1) of the Coal Mines (Lighting) General Regulations, 1947

CLASS 1.

Electric Cap Lamps.*

| Submitted by | Name of Type | Bulb Rating | |
|---|----------------------------------|--------------|---------------------------------------|
| | | <i>Volts</i> | <i>Amperes</i> |
| 1. Alkaline Batteries Ltd., Hunt End Works, Red- ditch | N.C. 113 and } ... | 3.75 | 1.0 (main fila- ment) |
| | N.C. 113A } ... | | |
| | Nife N.C. 113B ... | 3.6 | 1.0 |
| | Nife N.C. 113C ... | 3.6 | 1.0 (with pilot bulb) |
| 2. Ceag Ltd., Queens Road, Barnsley. | Ceag 4V Jellac ... | 4.0 | 0.55 (twin fila- ment) |
| | Ceag A6 ... | 3.75 | 1.0 (single or twin filament) |
| | Ceag A7 ... | 3.75 | 1.0 (single or twin filament) |
| | Ceag A7 ... | 3.6 | 1.0 (with or with- out pilot bulb) |
| | Ceag CgL1 ... | 4.0 | 1.0 (with or with- out pilot bulb) |
| 3. Concordia Electric Safety Lamp Co., Ltd., Luma Works, Sanatorium Road, Cardiff. | C.L.3 and } ... | 3.75 | 1.0 (main fila- ment) |
| | C.L.3/M } ... | | |
| | C.L.3/P ... | 3.6 | 1.0 (main fila- ment) |
| | C.L.A. ... | 3.6 | 1.0 (main fila- ment) |
| | C.L.3/4, C.L.3/5, C.L.3/6 ... | 3.6 | 1.0 |
| | C.L.A/4, C.L.A/5, C.L.A/6 ... | 3.6 | 1.0 |
| 4. Thomas A. Edison Ltd., Carfin Industrial Estate, New Stevenston, Lanark- shire. | Model K1-PMX ... | 3.6 | 1.0 |
| | Edison K1-3S ... | 3.6 | 1.0 (main file- ment) |
| 5. Ionic Alkaline Batteries Ltd., Victoria Street, Lon- don, S.W.1. | Ionic N.C. 113C... | 4.0 | 1.0 (with pilot bulb) |
| 6. Oldham & Son Ltd., Den- ton, Manchester. | D.4. ... | 4.0 | 0.65 |
| | G.W. ... | 4.0 | 0.8 |
| | Oldham-Wheat } ... | 4.0 | 0.8 (twin fila- ment) |
| | W and WM } | | |
| 7. Patterson Lamps Ltd., Second Avenue, Team Valley, Gateshead-on-Tyne, 11. | PT8/3 ... | 3.6 | 1.0 |
| | SS1 ... | 4.0 | 0.8 |
| | SS2 ... | 4.0 | 0.8 |
| 8. J. Youle & Co., Ltd., Mill- gate Works, Rotherham. | T.1. ... | 4.0 | 0.8 |

* For list of approved types of bulbs, see page 246.

CLASS II.

(a) *Electric Hand Lamps**.

| Submitted by | Name of Lamp | Bulb Rating | |
|---|-------------------------------|--------------|----------------|
| | | <i>Volts</i> | <i>Amperes</i> |
| 1. Alkaline Batteries Ltd., Hunt End Works, Redditch. | Nife N.20 | 2.5 | 1.75 |
| | | 2.5 | 1.5 |
| | Nife N.20T | 2.5 | 1.75 |
| | | 2.5 | 1.5 |
| 2. Ceag Ltd., Queens Road, Barnsley. | Ceag Alkaline, A.H.1. | 2.5 | 1.75 |
| | Ceag Alkaline, C.18.T. | 2.5 | 1.75 |
| 3. Concordia Electric Safety Lamp Co., Ltd., Luma Works, Sanatorium Road, Cardiff. | Concordia K.G.2. ... | 2.5 | 1.75 |
| | | 2.5 | 1.75 |
| 4. John Davis & Son (Derby) Ltd., All Saints' Works, Derby. | D.1. | 2.5 | 1.75 |
| 5. Ionic Alkaline Batteries Ltd., Victoria Street, Lon- don, S.W.1. | Ionic N.20T | 2.5 | 1.75 |
| | | 2.5 | 1.5 |
| 6. Oldham & Son Ltd., Den- ton, Manchester. | S (including S4V) ... | 4.0 | 1.0 |
| | | 4.0 | 1.0 |
| 7. Patterson Lamps Ltd., Second Avenue, Team Valley, Gateshead-on-Tyne, 11. | K2 | 2.5 | 1.75 |
| | K3 | 2.5 | 1.75 |
| | G4 | 4.0 | 1.0 |
| 8. E. Thomas & Williams Ltd., Cambrian Lamp Works, Aberdare. | K2 Nife N.20 | 2.5 | 1.75 |
| | | 2.5 | 1.75 |
| | | 2.5 | 1.5 |
| 9. Wolf Safety Lamp Co., (Wm. Maurice) Ltd., Saxon Road Works, Sheffield, 8. | Wolf Alkaline No. 950/E | 2.5 | 1.75 |
| | | 2.5 | 1.75 |
| 10. J. Youle & Co. Ltd., Millgate Works, Rother- ham. | Youle Y4 | 4.0 | 1.0 |

* For list of approved types of bulbs see page 246.

(b) *Flame Lamps.*

| Submitted by | Name of Type |
|--|--|
| 1. John Davis & Son (Derby) Ltd., All Saints' Works, Derby. | Dalight |
| 2. Hailwood & Ackroyd Ltd., Morley, Leeds. | Ackroyd's Improved No. 1. |
| | Hailwood W.B. Improved H.C.P. No. 1 |
| 3. J. H. Naylor Ltd., Central Brass Works, Wigan. | Hailwood W.B. Improved H.C.P. No. 2 |
| | Naylor S.H. |
| 4. Patterson Lamps Ltd., Second Avenue, Team Valley, Gateshead-on-Tyne, 11. | H.C.P. |
| | H.C.P.2 |
| | H.C.P.9 |
| 5. Protector Lamp and Lighting Co., Ltd., Eccles, Manchester. | Teale's Mark VII |
| 6. E. Thomas and Williams Ltd., Cambrian Lamp Works, Aberdare. | Cambrian No. 6 |

2. Schedule B.

Types of lamps which are approved but do not comply with the standard of lighting performance prescribed under Regulation 5 (1) of the Coal Mines (Lighting) General Regulations, 1947.

CLASS I.—TYPES APPROVED FOR GENERAL USE.

(a) *Electric Lamps.*

| Submitted by | Name of Type |
|---|---|
| 1. Alkaline Batteries Ltd., Hunt End Works, Redditch. | Alkaline Searchlight S.6 Nife NC 102 Cap* |
| 2. Ceag Ltd., Queens Road, Barnsley. | Ceag A5 Cap* Ceag 4-volt Type 4* Ceag 4-volt Pillarless Ceag Shaft and Roadway Ceag Shaft and Roadway, B |
| 3. Concordia Electric Safety Lamp Co. Ltd. Luma Works, Sanatorium Road, Cardiff. | Concordia KG* Concordia CKD Cap* Concordia SCL*, SCL2* and SCL/M Cap* Concordia Shaft and Roadway LAK Locomotive, Shaft and Roadway. |
| 4. John Davis & Son (Derby) Ltd., All Saints' Works, Derby. | D2SM* Davis Derby 2 Cap* |
| 5. Thomas A. Edison Ltd., Carfin Industrial Estate, New Stevenston, Lanarkshire. | Model J Cap* P2M Cap* Edison Cap |
| 6. Federation Lamp Co., Saxon Road Works, Sheffield, 8. | Federation |
| 7. W. E. Gray, 17-19 Curnock Street, London, N.W.1. | Gray-Sussmann 4C* |
| 8. International Gas Detectors Ltd., Great Wilson Street, Leeds. | C.H.4* |
| 9. Oldham & Son Ltd., Denton, near Manchester. | Oldham-Wheat Q* and QM Cap* F (including C4)* GQ Cap* S* (including S4V*) with 4.0 volt 0.75 amp. bulb Oldham 6-volt Pillarless Oldham Shaft and Roadway, R1 and R.2 Oldham SLEM Hand |
| 10. Patterson Lamps Ltd., Second Avenue, Team Valley, Gateshead-on-Tyne, 11. | PT8 Cap* G2 L1 Floodlight L2 Inverted Floodlight |
| 11. E. Thomas & Williams Ltd., Cambrian Lamp Works, Aberdare. | K3* K4* |
| 12. Wolf Safety Lamp Co. (Wm. Maurice) Ltd., Saxon Road Works, Sheffield, 8. | Wolf Alkaline No. 830C*, 830CR* and 830L Cap* Slimmer Cap* Wolf Alkaline 950/OO* Wolf Alkaline Nos. 950/O, 950/EI, 950/I, 950/II and 950/OOI Wolf Alkaline Nos. 950A/E, 950B/E, 950A/OO, 950B/OO and 950A/1 Wolf Alkaline Cap No. 830B |

(b) *Flame Lamps.*

| Submitted by | Name of Type |
|--|--|
| 1. John Davis & Son (Derby) Ltd., All Saints' Works, Derby. | Davis-Kirkby No. 2A (Haydock Pattern)* Davis 2 BA* No. 1 Davis-Marsic Davis Marstry and Davis Mars-tryn Nos. 2, 2A and 2B Davis Kirkby Hailwood ADC4* Hailwood Nos. 01, 01B and 01S NP* |
| 2. Hailwood & Ackroyd Ltd., Morley, Leeds. | Marsaut A and E Bifold Burner A1, A3 and B7 |
| 3. J. H. Naylor Ltd., Central Brass Works, Wigan. | Premier Nos. 7, 8 and 11 Premier Marsaut No. 12 Patterson No. 12 CT33A* and CT33AA* Prestwich Patent Protector (SL and BL) Nos. 1 J.C.M. Rothwell A Teales Protector Nos 1 and 2 Teales Standard Bonnetted Marsaut No. 4 Teales Mueseler or Thornbury No. 6 |
| 4. Patterson Lamps Ltd., Second Avenue, Team Valley, Gateshead-on-Tyne, 11. | Cambrian No. 4* |
| 5. Premier Lamp & Engineering Co., Ltd., Moorfield Works, Whingate, Armley, Leeds, 12. | Cambrian Nos. 1 and 9E |
| 6. Protector Lamp & Lighting Co., Ltd., Eccles, Manchester. | Wolf†7S, 7SMB, 7SE and 7SEMB |
| 7. E. Thomas & Williams Ltd., Cambrian Lamp Works, Aberdare. | |
| 8. Wolf Safety Lamp Co. (Wm. Maurice) Ltd., Saxon Road Works, Sheffield, 8. | |

* These lamps passed the 1934 Schedule A lighting requirements but do not meet the higher standard of the 1947 Lighting Regulations. Most of these types are temporarily permitted to remain in use as Schedule A lamps until supply difficulties are overcome.

† Formerly known as "Wolf Patterson".

CLASS II.—TYPES APPROVED FOR USE AS OFFICIALS' INSPECTION LAMPS.

(a) *Electric Lamps.*

| Submitted by | Name of Type |
|---|---|
| 1. Alkaline Batteries Ltd., Hunt End End Works, Redditch. | Nife N.H. 113 Hand Nife N.H. 10A Nife G.10 Hand |
| 2. Ceag Ltd., Queen's Road, Barnsley. | Ceag Deputy Ceag Inspection Ceag 2-volt Inspection Ceag Inspection Types A, 3 and 4 Ceag Bull's Eye Gas Detecting, No. 3* Ceag Inspection Type A.1 Ceag A7 Tublight Ceag Methanometer |

| Submitted by | Name of Type |
|--|---|
| 3. Concordia Electric Safety Lamp Co., Ltd., Luma Works, Sanatorium Road, Cardiff. | Concordia Shunters II Concordia KBO and KGS Concordia S.C.L/O Cap Handy I, II and III Officials' Midget I and II Officials' Thor Bull's Eye (NPE Surveyors) NH10A (known as "Handy Grip") |
| 4. Federation Lamp Co., Saxon Road Works, Sheffield, 8. | Federation Rescue |
| 5. Ionic Alkaline Batteries Ltd., Victoria Street, London, S.W.1. | Ionic N.H.113 Hand Ionic G.10 Hand |
| 6. Oldham & Son Ltd., Denton, near Manchester. | Oldham B.L.E., E.L.E. Hand and S.L.E. Oldham-Wheat Q.L.E. and Q.S. Oldham Q.P. Chest Lamp Oldham WS-M Oldham QLE-M Oldham Q.S.-M WLE-M Inspection G.W. Surveyors Cap "Tanka" Inspection |
| 7. Wolf Safety Lamp Co., (Wm. Maurice) Ltd., Saxon Road Works, Sheffield, 8. | Wolf Alkaline Nos. 950A/III/0, 950S/III/0, 966/E/0, 966/E/00 and 641 |
| 8. J. Youle & Co., Ltd., Millgate Works, Rotherham. | Aldwarke Officials' Youle Inspection Type T.1. |

(b) *Flame Lamps.*

| Submitted by | Name of Type |
|--|---|
| 1. John Davis & Son (Derby) Ltd., All Saints' Works, Derby. | Davis-Boss A* No. 3 Davis-Boss No. 7 Davis Diabl |
| 2. Hailwood & Ackroyd Ltd., Morley, Leeds. | Beacon Gas Detector No. 2* Hailwood Nos. 01A, 01BA and O6 Hailwood ADC4 Officials' Type 06BA |
| 3. J. H. Naylor Ltd., Central Brass Works, Wigan. | Marsaut A1 and Marsaut E1 Bifold Burner Officials' |
| 4. Patterson Lamps Ltd., Second Avenue, Team Valley, Gateshead-on-Tyne, 11. | A2 and B8 G.T.L.9* M.I.G. |
| 5. Premier Lamp & Engineering Co., Ltd., Moorfield Works, Whingate, Armley, Leeds. | Premier Nos. 7A, 7R* and 7AR* |
| 6. Protector Lamp and Lighting Co., Ltd., Eccles, Manchester. | Prestwich Patent Protector A Prestwich Patent Protector (self contained igniter) Type 6* and 6A* Protector M.C.40 1A (J.C.M.) Rothwell A.1 Teale's Standard Bonnetted Marsaut No. 4A Teale's Protector Nos. 1A and 2A |

| Submitted by | Name of Type |
|---|---|
| 7. E. Thomas & Williams Ltd., Cambrian Lamp Works, Aberdare. | Cambrian Nos. 1A and 4 (including No. 4 Officials' Relighter) Cambrian No. 2A* Cambrian Firemen's Spirit Lamp No. 8 |
| 8. Wolf Safety Lamp Co. (Wm. Maurice) Ltd., Saxon Road Works, Sheffield, 8. | Wolf† Nos. 7RS and 7RMBS* |

* Approved for use by deputies and shot firers for gas-testing purposes, see page 252.

† Formerly known as "Wolf Patterson".

CLASS III.—TYPES APPROVED FOR USE AS OFFICIALS' AUXILIARY LAMPS.

(a) *Electric Lamps.*

| Submitted by | Name of Type |
|--|--|
| 1. Alkaline Batteries Ltd., Hunt End Works, Redditch | NG7 Handlamp NG10A Handlamp |
| 2. Ceag Ltd., Queens Road, Barnsley. | Ceag Universal Torch 2-cell and 3-cell Ceag Bull's Eye No. 3 Ceag Type BE3 Signalling lamp Ceag Inspection Type A.1 Ceag A7 Tublight |
| 3. Concordia Electric Safety Lamp Co., Ltd., Luma Works, Sanatorium Road, Cardiff. | Concordia Emergency Torch 2-cell and 3-cell Thor Pocket Emergency (PEB Surveyors) PB Torch Anti-Explosive Torch Mining Dial Torch |
| 4. Cooke Troughton & Simms Ltd., Haxby Road, York. | |
| 5. John Davis & Son (Derby) Ltd., All Saints' Works, Derby. | Davis-Derby Flash |
| 6. General Electric Co., Ltd., Witton, Birmingham. | G.E.C. Safety Torch L6060 |
| 7. Hilger & Watts Ltd., 48 Addington Square, London, S.E.5. | Standard Pen Torch Mark II |
| 8. Oldham & Son Ltd., Denton, near Manchester | Oldham Torch T.D.1. Oldham-Wheat Q.S.B. T.D.1A Torch T.D. 2A Torch |
| 9. Watts, Fincham (1932) Ltd., 2 Gt. Winchester Street, London, E.C.2. | Wefco Model 5 Safety Hand Torch |
| 10. Wolf Safety Lamp Co. (Wm. Maurice) Ltd., Saxon Road Works, Sheffield, 8. | Wolf Alkaline Nos. 966, 966A and 966C Wolf DB. Torch |

(b) *Flame Lamps.*

| Submitted by | Name of Type |
|---|--|
| 1. John Davis & Son (Derby) Ltd., All Saints' Works, Derby. | Davis-Boss "R" and "R.1" Davis-Derby Dwarf Deputy and Dwarf Deputy No. 1* |
| 2. Hailwood & Ackroyd Ltd., Morley, Leeds. | Beacon Gas Detector* W.B. Gas Detector* |

| Submitted by | Name of Type |
|---|-------------------------------------|
| 3. E. Thomas & Williams Ltd., Cambrian Lamp Works, Aberdare. | Cambrian "Midget" Internal Igniter* |
| 4. Wolf Safety Lamp Co. (Wm. Maurice) Ltd., Saxon Road Works, Sheffield, 8. | Baby Wolf Relighter MBS* |

* Approved for use by deputies and shot-firers for gas-testing purposes. See page 252.

CLASS IV.—TYPES APPROVED FOR USE ON HORSES.

| Submitted by | Name of Type |
|---|---|
| 1. Concordia Safety Lamp Co., Ltd., Luma Works, Sanatorium Road, Cardiff. | Concordia Midget Pony |
| 2. John Davis & Son (Derby) Ltd., All Saints' Works, Derby. | Davis-Hunter Pony Davis-Sharlston Pony |

NOTE.

For certain types of lamps originally submitted for test—

| By | Now See |
|---------------------------------------|--|
| Ackroyd & Best Ltd. | Hailwood & Ackroyd Ltd. |
| "Ceag" Miners' Supply Co., Ltd. | Ceag Ltd. |
| T. A. Hodgkiss & W. E. Smith | J. Youle & Co., Ltd. |
| Richard Johnson, Clapham & Morris | Protector Lamp and Lighting Co., Ltd. |
| J. H. Rothwell & Co. | |
| W. E. Teale & Co., Ltd. | |
| J. H. Naylor | J. H. Naylor Ltd. |
| Batteries Ltd. } | Alkaline Batteries Ltd. |
| Nife Batteries } | |
| Patterson & Co. | Patterson Lamps Ltd. |
| Thor Electric Safety Lamp Co., Ltd. } | Concordia Electric Safety Lamp Co., Ltd. |
| Thor Lamps & Supplies Ltd. } | |
| Wolf Safety Lamp Co. | Wolf Safety Lamp Co. (Wm. Maurice) Ltd. |




B. LAMP GLASSES FOR USE IN FLAME LAMPS.

LIST OF SAFETY LAMP GLASSES APPROVED IN PURSUANCE OF SECTION 33 OF THE COAL MINES ACT, 1911.

Glasses manufactured by the following manufacturers and bearing the manufacturer's trade mark as reproduced below are approved, until further order, for use in any flame safety lamp of approved type.

In each case the approval is subject to the following condition, in addition to any conditions specified in the official description of the lamp in which the glass is to be used—

that in addition to bearing the trade mark each glass is marked to show its size, either (i) by a numeral following a lamp-maker's initials as specified in the official description of the lamp in which the glass is to be used, or (ii) by numerals giving the maximum external diameter and mean height of the size (the former to be placed first.)

| Submitted by | Trade Mark of Glass |
|---|---|
| 1. Butterworth Brothers Ltd., Newton Heath, Manchester, 10. |  |
| 2. Hailwood & Ackroyd Ltd., Morley, near Leeds. | <p>"HAILUXO"</p>  |
| 3. J. A. Jobling & Co. Ltd., Wear Glass Works, Sunderland. | <p>PYREX</p> |
| 4. John Moncrieff Ltd., Perth. |  <p>BRITISH</p> |
| 5. Societe Anonyme Val St. Lambert, Val St. Lambert, Belgium (Agents: Hailwood & Ackroyd Ltd., Morley, near Leeds.) | <p>VALTM ST. LAMBERT D.S.4</p> |

C. PYROPHOR RELIGHTER BARS.

LIST OF APPROVED BRANDS.

| Submitted by | Brand |
|--|-------------|
| 1. British Flint & Cerium Manufacturers Ltd., Tonbridge, Kent. | Carman |
| 2. Premier Lamp & Engineering Co. Ltd., Leeds. | Phoenix |
| 3. Wolf Safety Lamp Co. (Wm. Maurice) Ltd., Sheffield. | Pyrearthium |

D. LAMP BULB RATINGS.

LAMP BULB RATINGS FOR USE IN ELECTRIC LAMPS.

List of safety lamp bulb ratings either approved or accepted as the ultimate standards for approved bulbs in pursuance of paragraph (1) of Regulation 6 of the Coal Mines (Lighting) General Regulations, 1947, for use in electric lamps to which Regulations Nos. 4-8 apply.

CATEGORY 1A RATINGS.

(Designed to comply with the requirements of safety lamps of modern design.)

| Rating | | Cap | Diameter of glass m.m. | Overall length m.m. | Type of Lamp |
|--------|---------|---------------------|------------------------------|---------------------------|--------------------|
| Volts | Amps. | | | | |
| 2.5 | 1.75 | 953 <i>Krypton</i> | 18 ± 2 | 43.5 ± 2 | Hand |
| 2.5 | 1.75 | E.14/23 \times 15 | 18 ± 2 | 45.5 ± 2 | Hand |
| 3.6 | 1.0 | E.10/13 | 18 ± 1 | $31 + 1 - 2$ | Cap |
| 3.75 | 1.0/1.0 | B.15d/17 | 18 ± 2 | 40 ± 2 | Cap |
| 4.0 | 0.8 | E.10/13 | 18 ± 1 | $31 + 1 - 2$ | Cap |
| 4.0 | 1.0 | E.14/23 \times 15 | 18 ± 2 | 45.5 ± 2 | Hand |

CATEGORY 1B RATINGS.

(Designed to comply with the requirements of safety lamps approved since 1934 and prior to the Lighting Regulations, 1947. Lamp bulbs in this category are obsolescent but will remain in use until such time as those safety lamps which do not meet the requirements of the Lighting Regulations, 1947, have been withdrawn from use in mines.)

| Rating | | Cap | Diameter of glass m.m. | Overall length m.m. | Type of Lamp |
|--------|-----------|-----------------------|------------------------------|---------------------------|--------------------|
| Volts | Amps. | | | | |
| 4.0 | 0.55/0.55 | B.15d/21 <i>Argon</i> | 25 ± 1 | 49 ± 1 | Cap |
| 2.5 | 1.5 | 953 <i>Krypton</i> | 18 ± 2 | 43.5 ± 2 | Hand |
| 2.5 | 1.5 | E.14/23 \times 15 | 18 ± 2 | 45.5 ± 2 | Hand |
| 4.0 | 0.75 | E.14/23 \times 15 | 18 ± 2 | 45.5 ± 2 | Hand |
| 4.0 | 0.75 | Peg | 18 ± 2 | 47 ± 2 | Hand |

CATEGORY 2 RATINGS.

(Designed to comply with the requirements of safety lamps approved since 1934 and prior to the Lighting Regulations, 1947, but for which insufficient technical information was available for the purpose of full approval test. Lamp bulbs in this category are obsolescent and will be withdrawn in due course.)

| Rating | | Cap | Diameter of glass m.m. | Overall length m.m. | Type of Lamp |
|--------|---------|----------|------------------------|---------------------|--------------|
| Volts | Amps. | | | | |
| 2.5 | 1.0 | 953 | 25±1 | 46.5±2 | Cap |
| 2.5 | 1.0/1.0 | B.15d/21 | 25±1 | 49±1 | Cap |
| 3.75 | 1.0/1.0 | B.15d/21 | 25±1 | 49±1 | Cap |
| 4.0 | 0.8/0.8 | B.15d/21 | 25±1 | 49±1 | Cap |
| 3.6 | 1.0/0.5 | B.15d/17 | 18±2 | 40±2.5 | Cap |
| 4.0 | 0.55 | E.10/13 | 18±1 | 31+1—2 | Cap |

CATEGORY 3 RATINGS

(Approved for use in safety lamps of approved type but which will be used only in small numbers for experimental or trial purposes in mines.)

| Rating | | Cap | Diameter of glass m.m. | Overall length m.m. | Type of Lamp |
|--------|---------|--------------|------------------------|---------------------|--------------|
| Volts | Amps. | | | | |
| 2.5 | 1.0/1.0 | B.15d/17 | 18±2 | 40±2 | Cap |
| 3.75 | 1.0 | E.14/23 × 15 | 18±2 | 45.5±2 | Cap |
| 4.0 | 1.0 | 953 | 18±2 | 43.5±2 | Hand |
| 4.0 | 1.0 | E.10/13 | 18±1 | 31+1—2 | Cap |
| 4.8 | 0.8 | E.10/13 | 18±1 | 31+1—2 | Cap |

Note.—Bulbs in any of the above categories are required to be marked with the name and/or trade mark of the manufacturer, together with their rated voltage and rated amperes and the special mark prescribed for the purpose by the Minister (see page 118).

The following manufacturers have obtained approvals in respect of one or more of the ratings listed above :

| | <i>Trade Name.</i> |
|--|--------------------|
| 1. British Thomson-Houston Co. Ltd., Crown House, Aldwych, London, W.C.2. | Mazda |
| 2. Ceag Ltd., Queen's Road, Barnsley. | Ceag (or Lumax) |
| 3. Cryselco Ltd., Kempston Works, Bedford. | Cryselco |
| 4. Edison Swan Electric Co. Ltd., Ponders End, Enfield, Middlesex. | Ediswan |
| 5. General Electric Co. Ltd., Brook Green, Hammersmith, London, W.6. | Osram |
| 6. Metropolitan-Vickers Electrical Co. Ltd., Bush House, Aldwych, London, W.C.2. | Metrovick |
| 7. Philips Electrical Ltd., Century House, Shaftesbury Avenue, London, W.C.2. | Philips |
| 8. Popes Electric Lamp Co. Ltd., 5 Arthur Street, London, W.C.2. | Elasta |
| 9. Siemens Electric Lamps and Supplies Ltd., Dock Road, Preston. | Siemens |

E. ELECTRIC LIGHTING APPARATUS.

LIST OF APPROVED ELECTRIC LIGHTING APPARATUS (OTHER THAN LOCKED SAFETY LAMPS).

(a) LIST OF APPROVED TYPES OF ELECTRICAL APPARATUS OPERATED FROM A SOURCE OF ELECTRIC POWER EXTERNAL TO THE LIGHTING UNIT (No. 10(2) (d) OF THE COAL MINES (LIGHTING) GENERAL REGULATIONS, 1947).

1. Any type of electric apparatus that complies with BSS.889/1947 with Type A glass, and has been duly certified in respect of its flame-proof enclosure by the Minister.
2. British Thomson-Houston Co. Ltd., Rugby.—Type U.T.F. Fluorescent Lighting Fittings.
3. General Electric Co. Ltd., Magnet House, Kingsway, London, W.C.2.—Type IE single tube and twin tube fluorescent lamp fittings.
4. Metropolitan-Vickers Electrical Co. Ltd., Manchester.—Type U.T.F. Fluorescent Lighting Fittings.
5. Siemens-Schuckert (Great Britain) Ltd., 30 New Bridge Street, London, E.C.4.—Type L.169 Well-Glass Lighting Fitting.

(b) LIST OF ELECTRIC LIGHTS OPERATED FROM A SOURCE OF ELECTRIC POWER ENCLOSED IN THE LIGHTING UNIT (NO. 11 OF THE COAL MINES (LIGHTING) GENERAL REGULATIONS, 1947).

1. John Davis & Son (Derby) Ltd., All Saints' Works, Derby.—Pneumatic-electric lighting units, Types D40M, D60, and "Dafluor".
2. Wolf Safety Lamp Co. (Wm. Maurice) Ltd., Saxon Road Works, Sheffield, 8.—Wolf Air-turbo Lamps, Types 0444U and 0445U.

(c) LIST OF ELECTRIC LIGHTS WHICH ARE FITTINGS OR ACCESSORIES TO MACHINERY OR ELECTRIC PLANT (INCLUDING SIGNALLING APPARATUS) (NO. 11 OF THE COAL MINES (LIGHTING) GENERAL REGULATIONS, 1947).

1. Any type of electric lighting apparatus (including signalling apparatus) which is a fitting or accessory to machinery or electric plant

(a) if it is fixed in, or forms a constructive part of, apparatus which has been duly certified by the Minister in respect of its flameproof enclosure or as being intrinsically safe ;

(b) if it forms a constructive part of machinery which is covered by a specific approval and the part which constitutes electric lighting equipment has been duly certified in respect of its flameproof enclosure by the Minister.

2. Safety in Mines Research Establishment of Ministry of Fuel and Power—Lighting equipment for cinematography, and lighting equipment for photography.

LOCOMOTIVES.

LIST OF LOCOMOTIVES APPROVED FOR THE PURPOSE OF REGULATION 5(4) OF THE COAL MINES (LOCOMOTIVES) GENERAL REGULATIONS, 1949.

A. DIESEL LOCOMOTIVES.

| Submitted by | Name of Locomotive |
|--|---|
| 1. Hudswell, Clarke & Co. Ltd., Leeds. | 100-h.p. "Hudswell Clarke " } Mines 65-h.p. "Hudswell Clarke " } Type } Diesel } Loco- } motive |
| 2. Hunslet Engine Co. Ltd., Leeds. | 20/25-h.p. "Hunslet " Mines Type Diesel Locomotive 50-h.p. "Hunslet " do. 50-h.p. Mark II "Hunslet " do. 100-h.p. "Hunslet " do. 100-h.p. Mark II "Hunslet " do. 93/102-h.p. "Hunslet " do. 65-h.p. Mark III "Hunslet" do. 24-h.p. "Hunslet " do. 70-h.p. "Hunslet " do. 100-h.p. do. |
| 3. North British Locomotive Co. Ltd., Glasgow. | |
| 4. Ruston & Hornsby Ltd., Lincoln. | 44/48-h.p. and 33/40-h.p. "Ruston " Class "D.L." Locomotive 25/30-h.p. and 16/20-h.p. "Ruston " Class "D.L." Locomotive 48-h.p. and 40-h.p. "Ruston " Class "D.L.G." Locomotive 100-h.p. Class "D.L.G." Locomotive 20-h.p. and 30-h.p. "Ruston " Class "D.L.G." Locomotive |

B. STORAGE BATTERY LOCOMOTIVES.*

| Submitted by | Name of Locomotives |
|---|---|
| 1. British Jeffrey-Diamond Ltd., Wakefield, Yorks. | Type BDM-20-BU Storage Battery Locomotive |
| 2. Greenwood & Batley Ltd., Leeds, 12. | Type GB2 Storage Battery Locomotive |
| 3. Logan Mining Machinery Co. Ltd., Lochee, Dundee. | Type L4/1 Storage Battery Locomotive Type L8/1 Storage Battery Locomotive Type L8/2 Storage Battery Locomotive Type L12/1 Storage Battery Locomotive |
| 4. Metropolitan-Vickers Electrical Co. Ltd., Trafford Park, Manchester, 17. | Type D.B.F. 12/1 Storage Battery Locomotive |
| 5. William Neill & Son (St. Helens) Ltd., St. Helens Junctions, Lancashire. | Type Atlas A.1. Storage Battery Locomotive |

* Certain locomotives that were in use or on order before 20 September, 1949, have been given limited approval to permit their continued operation at the mines concerned.

METHANOMETERS.

(APPROVED IN PURSUANCE OF REGULATION 2 (i) (a) OF THE COAL MINES (VENTILATION) GENERAL REGULATIONS, 1947.)

LIST OF APPROVED TYPES.

| Name of Apparatus | Date of Approval |
|--|--------------------|
| 1. McLuckie Methanometer, Type M (Methanometer Approval No. 1) | 26 September, 1949 |
| 2. Ringrose Methane Recorder (Methanometer Approval No. 2) | 26 September, 1949 |
| 3. M.S.A. Type W.8 Methanometer (Methanometer Approval No. 3) | 13 May, 1950 |
| 4. Ringrose Methanometer Type IV (Methanometer Approval No. 4) | 5 October, 1950 |

PROTECTIVE EQUIPMENT.

CERTIFICATES HAVE BEEN ISSUED IN RESPECT OF THE FOLLOWING TYPES OF SAFETY HATS.

| Submitted by | Name of Hat |
|--|--|
| 1. Richard A. Bathgate, London Life Building, Derby Square, Liverpool, 2. | Bathgate Miners' Helmets— (a) Standard type with peak (b) with retractable eye and face shield |
| 2. The Bushing Co. Ltd., Queensway, Team Valley Trading Estate, Gateshead-on-Tyne. | Type P.178 Safety Helmet |

| Submitted by | Name of Hat |
|---|---------------------------|
| 3. Helmets Ltd., Moat Factory, Wheat-hampstead, St. Albans. | Type M588 Cromwell Helmet |
| 4. Patent Pulp Manufacturing Co. Ltd., Thetford, Norfolk. | Type 100 Safety Hat |
| 5. Siebe, Gorman & Co. Ltd., Davis Road, Tolworth, Surrey. | Cool Cap Safety Hat |

RESCUE APPARATUS.

(a) LIST OF BREATHING APPARATUS APPROVED FOR USE IN MINES AND AT CENTRAL RESCUE STATIONS.*

| Submitted by | Name of Apparatus |
|---|--|
| 1 American Atmos Corporation. | Paul |
| 2. Guest & Grimes Ltd. | Blackett's Aerophor Brown-Mills |
| 3. Mine Safety Appliances Co. | Gibbs |
| 4. Rotherham and District Rescue Station Board. | Rotherham |
| 5. Siebe, Gorman & Co. Ltd. | Lungovox Proto (Mark I) Proto Mark II H and II L Proto Mark III H and III L Proto Mark IV H and IV L Savox Vitox Mark I Vitox Mark II |

(b) LIST OF SMOKE HELMETS, ETC., APPROVED FOR USE IN MINES AND AT CENTRAL RESCUE STATIONS.*

| Submitted by | Name of Apparatus |
|-----------------------------|---|
| 1. Siebe, Gorman & Co. Ltd. | Antipoy's Short Distance Fresh Air Breathing Apparatus : " A " Full Mask Type; " B " Ori-Nasal or Half Mask Type; " C " Mouthpiece and Noseclip Type. Bloman Apparatus Briggs Equalizer Briggs Improved Equalizer Spirelmo Smoke Helmet Apparatus : " A " Speaker Type; " B " Ordinary Type. |
| 2. Simonis & Bremner. | Securitas Smoke Helmet Apparatus : Helmet Type ; Face Mask Type. |

* See No. 11 of General Regulations dated 10 December, 1928, page 143.

MISCELLANEOUS APPROVALS.

In addition to the foregoing approvals which refer mainly to approved brands of apparatus, a number of approvals have been made, for specific purposes, of apparatus of any make which conforms to prescribed specifications. In previous editions of this volume, similar approvals have appeared as footnotes to the regulations to which they refer, but for convenience they are now grouped together in this part of the volume.

ARTICLES AUTHORISED TO BE TAKEN BELOW GROUND (SECTION 35(5))

For the purposes of Section 35(5) of the Act, the Minister has authorised the taking below ground of any article of the following description—

BUFFING MACHINES

A buffing machine to be used in connection with the repair of conveyor belts, and consisting of a buffing pad attached to the spindle of either a Siemens-Schuckert E.47 A.C. electric motor of the type which is covered by Flameproof Certificate No. FLP.2500, or a Holman Roto Sander, Size No. 2, compressed air drilling machine.

ELECTRIC RELIGHTING APPARATUS

Apparatus for the relighting electrically of flame safety lamps, being apparatus fitted with a secure lock and constructed so as to comply in all respects with the regulations governing the use of electricity below ground.

DEPUTIES' AND SHOT FIRERS' SAFETY LAMPS.

For the purposes of Section 64(4) of the Coal Mines Act, 1911* and Article 6(f) (i) of the Explosives in Coal Mines Order, 1934† the Minister has approved lamps of the following types‡—

Any safety lamp (being a type of lamp approved by the Minister for the purposes of Section 33 of the Coal Mines Act, 1911) which is—

- (a) a combined flame and electric lamp;
- (b) a flame lamp fitted with a self-contained relighting device and adjustable by the user to admit air at the top of the lamp only;
- (c) for use in conjunction with a flame lamp of a type approved as being capable of giving light throughout the shift, an electric hand lamp weighing not more than three and a half pounds, or an electric cap lamp; or
- (d) for use in conjunction with a flame lamp of a type not approved as being capable of giving light throughout the shift, an electric hand lamp weighing not more than six and a half pounds, or an electric cap lamp; and
- (e) in the case of an electric lamp or combined flame and electric lamp, provided with a switch.

* *i.e.*, lamps for deputies' inspections.

† *i.e.*, lamps for shot firers in mines not covered by the Coal Mines (Explosives) Order, 1951, which applies only to *coal* mines.

‡ *see* pages 241–4.

APPROVALS FOR THE PURPOSES OF THE COAL MINES (EXPLOSIVES)
ORDER, 1951.

BREAK DETECTOR

For the purposes of Article 13(1)(c) of the Coal Mines (Explosives) Order, 1951 the Minister has approved the following design of break detector—

1. *General*

A straight stiff rod or tube, made of hard brass, steel, aluminium alloy, or other material of similar rigidity and durability, with a flat prong at one end, which forms an integral part of it or is securely attached to it, and which is made of, or tipped with, hard wearing metal.

2. *Dimensions.*

Length of rod or tube—at least four feet six inches, or six inches longer than the depth of the deepest shot hole in which the detector is to be used, whichever is the greater.

Diameter of rod or tube—Not more than half inch.

Length of prong—Not less than three-quarters inch, not more than one inch, from the centre of the rod or tube.

Width and thickness of prong at tip—Not more than three—thirty second inch.

Note—

(1) *The specified design requirements are intended to ensure that the break detector is suitable for detecting any break of over one-eighth inch in width (Article 38(3) of the Coal Mines (Explosives) Order, 1951). In Order that such longitudinal breaks can be found, the prong should not only have a limiting width at the tip of three thirty-second inch or less (as specified) but should also taper steeply so that the point will drop sufficiently far into the break. This means that the width of the prong at the base must be kept sufficiently small.*

(2) *If a hollow tube, instead of a solid rod, is used, there is no objection to filling it with a core of wood. Soft metal, such as copper, is unsuitable, because it soon becomes bent and worn. One method of forming the detector prong is to turn over and shape a suitable length of a steel rod and then to coat the tip with a hard wearing alloy, while a duralumin rod, for example, will require the fitting of a separate prong of steel tipped with hard wearing alloy.*

(3) *The break detector may incorporate a scraper, preferably attached at the opposite end from the detector prong. It is desirable that the scraper attachment should not comprise more than half a disc, so as to minimise the risk of its mis-use for charging or stemming.*

CIRCUIT TESTING DEVICE

For the purposes of Article 25(11) of the Coal Mines (Explosives) Order, 1951, the Minister has approved the following types of circuit testing devices—

1. The Davis Circuit Testing Ohmmeter, with a range of 0-300 ohms, manufactured by John Davis & Son (Derby) Limited, of All Saints'

Works, Derby, and to which the Ministry of Fuel and Power Certificate* Number T/EXP/35, dated 8 December, 1948, relates.

2. The Evershed Safety Ohmmeter, with ranges of 0-4, 0-5, 0-10, 0-20 and 0-100 ohms, manufactured by Evershed and Vignoles Limited, of Acton Lane Works, Chiswick, London, and to which the Ministry of Fuel and Power Certificate* Number T/TI/7, dated 19 July, 1945, as extended by letter dated 4 October, 1946, relates.

LIST OF CURRENT M. & Q. FORMS USED AT MINES UNDER THE COAL MINES ACT, 1911.

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* See page 233.

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APPENDIX.

MEMORANDUM ON THE STORAGE OF EXPLOSIVES AT MINES.

Under the Coal Mines Act, 1911, and the Coal Mines (Explosives) Order, all explosives used at a mine to which the Act applies must be provided by the owner of the mine and a suitable place above ground must be provided for the storage of the explosive. A suitable place has also to be provided conveniently near the entrance of the mine, for the storage of the unused explosive which the workmen are required to bring out at the end of each shift. The storage place should be at a safe distance from a shaft, engine-house or other vital point.

In making provision for the storage of explosive, the mine owner or manager has to comply with the requirements of the Explosives Acts, 1875 and 1923, and the orders made under those Acts, and this memorandum is designed to explain briefly the nature of those requirements and the methods by which the storage accommodation required can be provided to suit the varying circumstances of different mines.

There are three ways in which explosive in sufficient quantity for mining purposes may be kept—

1. In premises registered with the Local Authority.*
2. In a "store" licensed by the Local Authority.*
3. In a magazine licensed by the Secretary of State.

1. This method can be adopted where small quantities of explosive only are in store at any one time, and is often a suitable way of providing storage for unused explosive brought out of the mine when the main store is not conveniently near the mine entrance. The amount of explosive kept in this way must not exceed 200 lb. of gunpowder, or 60 lb. of other explosive or of mixed explosives. The conditions to be observed are contained in Section 22 of the Act and Order in Council No. 16 which should be consulted, but the main provisions are as follows—

The place of storage must be registered with the Local Authority and (if explosive other than gunpowder is kept) the manager or other responsible person having charge of the premises must hold a certificate from the Police that he is a fit person to keep the explosives.

The storage place must be a building substantially constructed of brick, stone, iron or concrete or an excavation made in solid rock, earth, or mine refuse not liable to ignition. It must be entirely appropriated† to the keeping of explosive and must be detached from a dwelling-house. It must also be situated at a safe distance (say 15 yards, or less if suitable protection intervenes) from any highway, street, public thoroughfare or public place, but there are

* See note on Local Authorities on page 259.

† Very small quantities, however, viz., up to 50 lb. of gunpowder or 15 lb. of other explosive or of mixed explosives, may be kept in a building not so appropriated, provided they are kept in a substantial receptacle properly closed and secured and exclusively appropriated to the purpose.

no further requirements as to the distances to be maintained between the storage place and other buildings and works in the vicinity.

The precautions mentioned in paragraphs 8, 11 and 13 of the summary of main requirements as to licensed stores given at the end of this memorandum must be observed.

2. The second method provides for larger quantities, and includes five different kinds of "Stores", named Divisions A, B, C, D and E. The quantity of explosive that may be kept in each class of store is as follows—

| | |
|------------|--------------------------------|
| Division A | 150 lb. of general explosive.* |
| „ B | 300 lb. „ „ „ |
| „ C | 1,000 lb. „ „ „ |
| „ D | 2,000 lb. „ „ „ |
| „ E | 4,000 lb. „ „ „ |

The conditions which apply to these stores are contained in Order in Council No. 6 of 27 November, 1875, as amended by the Store for Explosives Order, 1951, No. 1163, and a summary of them is given at the end of this memorandum.

The most important requirements which mine owners have to consider is that which provides that all stores shall be placed at certain distances from other buildings and works. An important modification in these distances, however, is often of material assistance to mine owners in cases where the surface space at the mine is restricted. By the Stores for Explosives Order, 1951 it is provided that in the case of stores licensed before 1 July, 1952, the distances may, in the case of a store of Divisions C, D and E, be reduced by half provided the protected work is in the occupation of the licensee and is completely screened from the store by a natural or artificial mound of earth, or other suitable material not less than three feet thick at the height of the eaves of the store. Further, it is provided by the same Statutory Instrument, that the distance between a store in any of the four divisions and a mineral railway or private railway or tramway line worked by the occupier need not be more than 75 feet, if the door or doors of the store be closed and secured when and so long as any locomotive driven by steam is within 150 feet of the store.

3. In cases where larger quantities than those mentioned above are required or where, owing to special local circumstances, it is impracticable to find a suitable place for a store, it will be necessary to provide a magazine under licence of the Secretary of State. In the first instance, it is advisable to communicate with Her Majesty's Inspectors of Explosives, Home Office, London, S.W.1, who will be prepared to consider the special requirements of each case and to recommend such conditions to suit the circumstances as may safely be entertained. The quantity of explosive that may be kept in a magazine is limited only by the provisions of the licence.

Workmen's canisters may be filled and kept in any place of storage provided as above.

* General Explosive means an explosive of Classes 1, 2 3 and 4 and of the 2nd and 3rd Divisions of Class 6 of the Home Office list of Authorised Explosives published by H.M.S.O.

LOCAL AUTHORITIES.

England and Wales

The Town Council is the Local Authority in any—

- (a) County Borough.
- (b) Quarter Sessions Borough (other than a County Borough) having over 10,000 inhabitants according to the Census of 1881
- (c) Borough having over 10,000 inhabitants according to the Census of 1881, for which a special Order has been made under Section 68 of the Explosives Act.

Elsewhere the Local Authority is the County Council which has, however, a power of delegation under the Act to—

- (a) a Committee of its own body;
- (b) an Urban or Rural District Council
- (c) the Justices in Petty Sessions.

The Councils of County Boroughs have the same power of delegation as County Councils.

Scotland.

In any Royal or Parliamentary Burgh the Local Authority is the Magistrates and Town Council.

Elsewhere the Local Authority is the County Council which has, however, power of delegation to a joint Committee of its own body and of any Town Councils within the County.

In Duns and Govan, for which a special Order has been made under Section 112 of the Act, the Police Commissioners are the Local Authority

Northern Ireland

In any Urban District the Local Authority is the Urban District Council, elsewhere it is the County Council.

(In any harbour, the Harbour Authority is the Local Authority).

SUMMARY OF THE MAIN REQUIREMENTS AS TO LICENSED STORES.

1. The store must be licensed by the Local Authority, in the name of the occupier, for mixed explosives.
2. The licence must be renewed annually.
3. The store must not be situated below ground in any mine, quarry or tunnel, or other underground place in which any persons are employed, or in any place opening into, from, or out of such mine, quarry, tunnel or underground place, or in communication therewith.
4. All buildings and places adjoining each other and occupied together are deemed to be one store, and must accordingly be included in one licence.
5. The following distances must be maintained from the store:—

Protected Works of Class 1.

Dwelling-house.
Shop.
Room, of any kind.
Workshop, of any kind.
*Mineral or private railway,
whether or not worked by
steam.
Furnace or kiln or fire.
Magazine for explosive.
Store for explosive.
Registered premises.
Highway, public footpath, or pro-
menade or open place of resort
for the public, or for persons en-
gaged in any trade or business.
Canal or navigable water.
Dock, river-wall or sea-wall.
Pier or jetty.
Reservoir.

In occupation of licen-
see, or with consent in
writing of occupier.

Protected Works of Class 2.

Dwelling-house.
Shop.
Room, of any kind.
Workshop, of any kind.
Railway, whether or not worked by
steam.
Furnace or kiln or fire.
Magazine for explosive.
Store for explosive.
Registered premises.
Factory of any kind.
Buildings in care of Minister of Works.
Place of public worship.
Educational establishments.
Hospital or like institution.
Court of Justice.
Theatre, cinema, covered market or other
covered building where persons are
accustomed to assemble.
Government or local government buildings.

Without the consent of
the occupier.

| Store belonging to | Distances from Protected Works of Class 1† | Distances from Protected Works of Class 2 |
|--------------------|---|--|
| Division A ... | 75 feet | 85 feet |
| Division B ... | 75 feet | 130 feet |
| †Division C ... | 146 feet | 292 feet |
| †Division D ... | 230 feet | 460 feet |
| †Division E ... | 352 feet | 704 feet |

6. Detonators must be kept effectively separated from other explosive. If a considerable quantity of detonators is required they may be kept in an annexe to the store which will be regarded as part of the store (the annexe should be of the same construction as the store and at least a few feet away from it); or in a place registered in accordance with the method first mentioned in the memorandum (the colliery office may be registered for the purpose if the gross weight of the detonators does not exceed 15 lb. and the detonators are kept in a locked box or drawer exclusively appropriated to the purpose; see footnote† on page 257). For a few hundred detonators, however, a cupboard in the porch of the store, so arranged that it cannot be opened unless the inner door of the store is closed, may be allowed. For weights of detonators, see table at the end of this summary.

* The store shall not be required to maintain a greater distance than 75 feet from a mineral or private railway worked by the licensee, provided that the door or doors of the said store be kept closed and secured when and so long as any locomotive driven by steam is within a distance of 150 feet of the store. "Mineral or private railway" includes a tramway or incline. (Statutory Instrument, 1951, No. 1163).

† In the case of stores licensed before 1 July, 1952, when the "protected work" is in the occupation of the licensee, and is completely screened from the store by a natural or artificial mound of earth or other suitable material not less than three feet thick at the height of the eaves of the store, the distances may be reduced by one-half. (Statutory Instrument, 1951, No. 1163).

7. When any explosive which is liable to be dangerously affected by water is kept, due precautions must be taken to exclude water from the store. This applies specially to ordinary dynamite, which is now seldom used. It is very necessary, however, to keep all explosives and detonators dry, or loss of efficiency and miss-fires will probably result.

8. The store must be well and substantially built of brick, stone, iron, steel or concrete, or excavated in solid rock, earth or mine refuse not liable to ignition, and so made and closed as to prevent unauthorised persons having access thereto, and to secure it from danger from without. Its construction must also be substantial and such as to render it not liable to unlawful entry, or to danger from accident or from evilly disposed persons; accordingly, it should be provided with good doors, and all ventilators, windows, keyholes, and other openings should be so closed or protected as to satisfy all reasonable requirements of security.

9. If licensed under Divisions C or D, and made otherwise than by excavation, the store must have attached a sufficient lightning conductor.

10. The interior of the store, and the benches, shelves and fittings therein must be so constructed or so lined or covered as to prevent the exposure of any iron or steel, and the detaching of any grit, iron, steel or similar substance in such manner as to come into contact with the explosive. This provision can best be complied with by lining the store with wood or other suitable material. A wooden lining will be easier to keep clean if painted or varnished, and will last much longer if the planks are thus treated on both sides before being placed in position. The floor must be of wood or asphalt free from grit. Nails should be preferably of copper, brass or zinc; but if iron nails are used, they should be countersunk and puttied over. All exposed ironwork, in the building should be efficiently covered with wood, leather or zinc, or should be thickly painted.

11. All tools and implements used in the store must be of wood, copper, brass or some soft metal or material, or be covered with some safe and suitable material.

12. The interior, benches, shelves and fittings of the store must, so far as is reasonably practicable, be kept free from grit and otherwise clean.

13. Due provision must be made by the use of suitable shoes or otherwise for preventing the introduction into the store of grit or of any exposed iron or steel. At every store there should be a visible boundary, formed by a step or by a vertical "footboard" (about four inches high), or otherwise, beyond which dirty or iron-nailed boots should never pass, except directly into over-boots of leather, rubber or other suitable material made without any iron; and these over-boots should in their turn never be placed outside the "clean" boundary (the word "clean" being here used in a technical sense, implying the exclusion of all grit), or be deposited where they can take up grit. Over-boots made very large (so as easily to take in the whole boot and lower part of the trousers) are more convenient than those which necessitate removing the ordinary boots, or which entail trouble and delay in putting on.

14. Due provision must be made by the use of suitable working clothes without pockets, searching, or by some of such means for preventing the introduction into the store of fire, matches, or any substance or article likely to cause explosion or fire, or any iron, or steel, or grit. (N.B.—The use of an artificial light of such construction, position or character as not to cause any danger of fire or explosion is permitted, e.g., an approved electric safety lamp or fixed electric lights of a type approved under the Coal Mines (Lighting) General Regulations, 1947).

This important provision can best be satisfied by requiring the storekeeper to wear a pocketless magazine suit, and forbidding other persons to enter. But as this is not always practicable or convenient, the storekeeper should be required not only habitually to search his own pockets, but also the pockets of any other persons who may enter the store, in order to detect and remove therefrom any dangerous articles, among which may be included a pipe, as this is sometimes placed in the pocket before it has been properly extinguished.

15. No person may smoke in any part of the store.
16. A person under the age of 16 shall not be employed in or enter the store except in the presence and under the supervision of some person of the age of 21 or upwards, and a person under the age of 16 shall not be employed in the store.
17. No repairs are to be executed to or in any part of the store, except after the store has, so far as is practicable, been cleaned by the removal of all explosive and the thorough washing out of the store.
18. The store is to be used only for the keeping of explosive and receptacles, tools or implements for work connected with the keeping of such explosive.
19. A warning notice to trespassers must be kept conspicuously posted up.

Weights of Detonators.

| Size of Detonator | Gross Weight per 1,000 Detonators | Remarks |
|-------------------|--------------------------------------|------------------|
| No. | lb. | |
| 3 | 3.19 | } Not much used. |
| 3a | 3.31 | |
| 4 | 3.62 | |
| 5 | 4.23 | |
| 6 | 4.95 | } Common sizes. |
| 6½ | 5.50 | |
| 7 | 7.06 | |
| 8 | 8.66 | |
| 9 | 9.76 | } Not much used. |
| 10 | 10.86 | |

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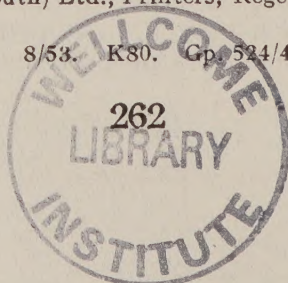
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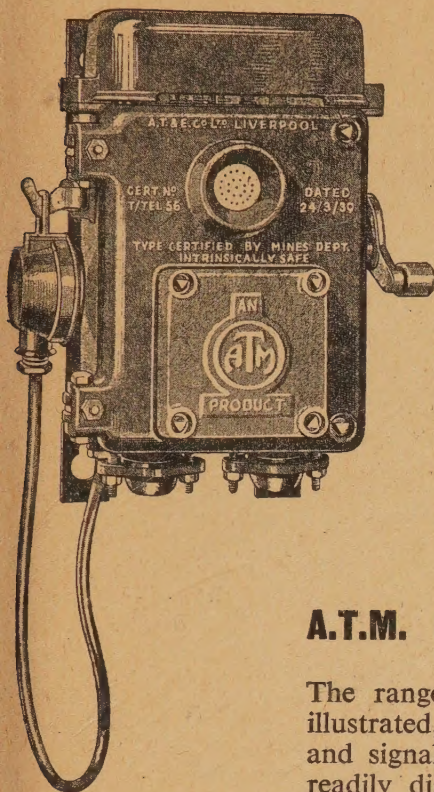
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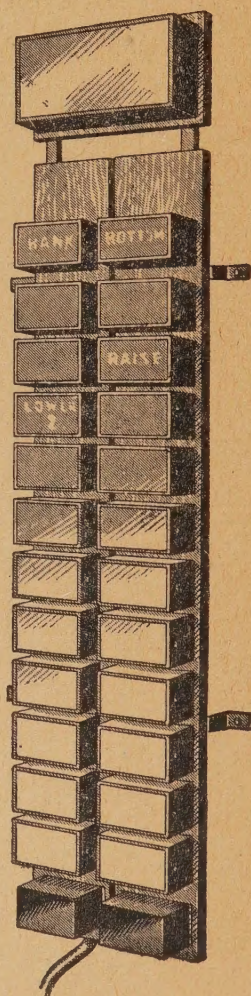
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